

The
American Annual
of Photography



1908



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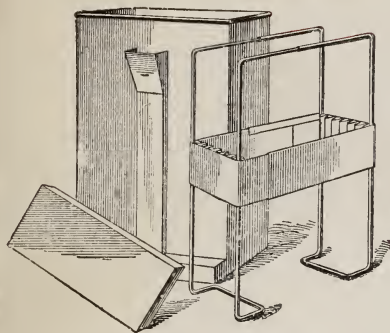
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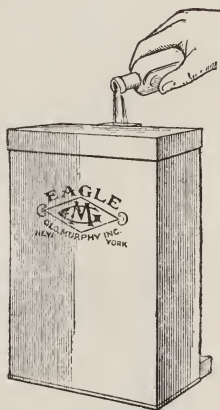
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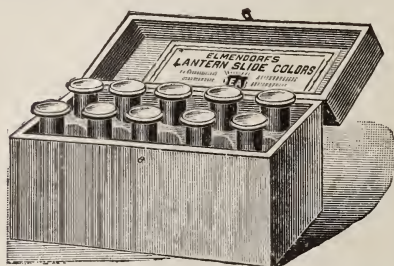
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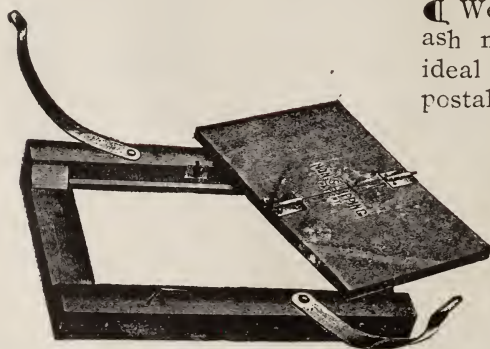
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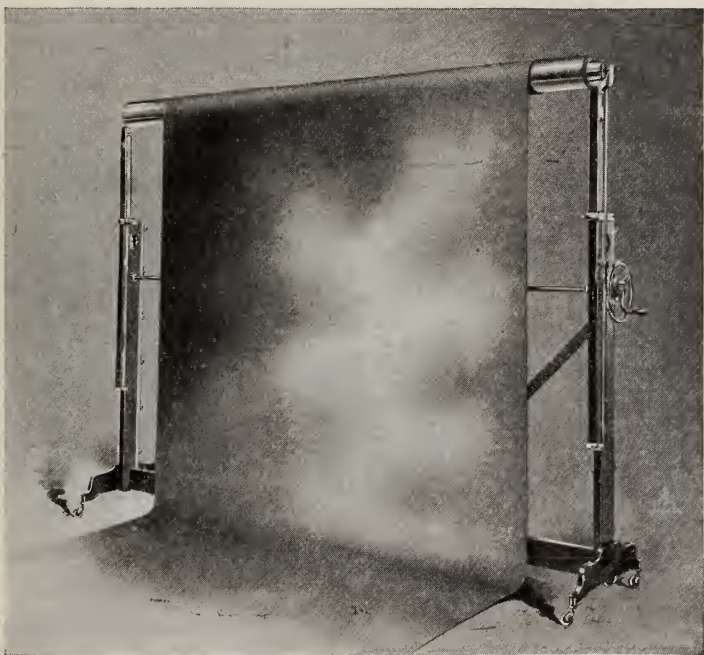


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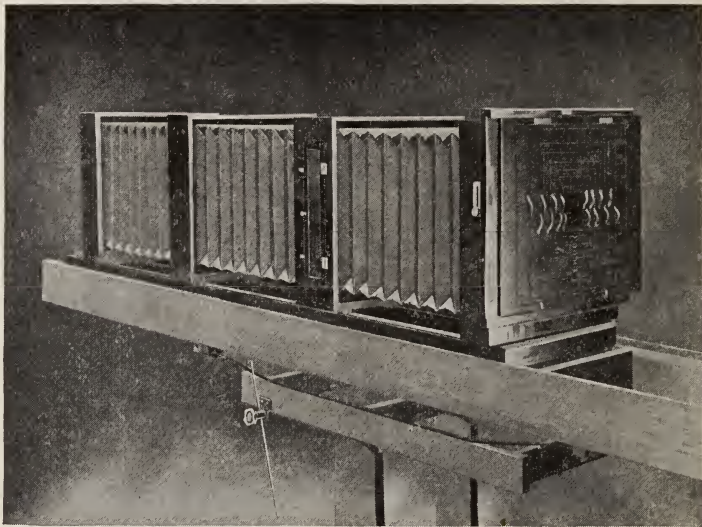


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Lens F 6.8. No Sun
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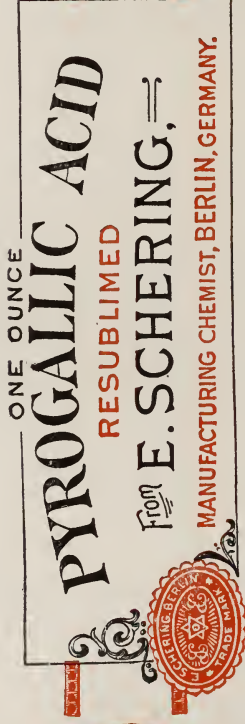
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The American Annual of Photography 1908

VOLUME XXII

Edited by John A. Tennant



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TENNANT AND WARD


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P R E F A C E .

E EDITORS do far too much talking, as Everyman knoweth. In truth, it is rarely by choice of ours, but rather a cloaking of the dry bones of necessity with the seeming fair robe of virtue.

The editorial function in an Annual—to my mind at least—should properly be confined to the gathering of interesting material, and its presentation in readable and attractive form. Unfortunately, material oftentimes falls short and the editor has to “fill space.”

Gladly, therefore, do I record the fact that this year's volume—the twenty-second issue of THE AMERICAN ANNUAL OF PHOTOGRAPHY—is wholly the work of photographers here and overseas. Its information comes from their experiences; its illustrations show their activities and interests. They have filled its ample pages with royal goodwill and crowded out the miscellany which bulked some of the earlier volumes. To each and every contributor my warmest appreciation and gratitude.

JOHN A. TENNANT.

NEW YORK, November, 1907.

TABLE OF CONTENTS.

Contributed Articles.

	PAGE
The Size of the Camera. By Chester B. Duryea.....	9
The Possibilities of Kallitype. By Eleanor W. Willard.....	21
Intensification: the Best Method. By Rev. John Gmeiner.....	27
Focal Plane Cameras. By H. W. Hales.....	32
Developing in the Tropics Without Ice. By R. W. Harrison.....	35
Amidol. By Henry Erle Cooper.....	38
Test Papers in Photography. By David Gray Archibald.....	42
Tank Development. By C. H. Claudy.....	45
Time Development. By W. S. Davis.....	51
Church Interiors. By Robert W. Tebbs.....	57
The Kallitype Process. By Walter W. Lakin.....	61
Coloring Post Cards. By Henry C. Delery.....	65
Recording Exposures. By H. W. Gassman.....	71
Photographing Tarpon. By Julian A. Dimock.....	73
Vacation Photography. By J. C. Hegarty.....	79
Photographing Footprints. By John Boyd.....	87
Mounting Prints in Albums. By C. M. Whitney.....	91
A Universal Developer. By Maximilian Toch, F.C.S.....	95
Press Photography. By Catharine Weed Ward.....	97
Photographing Blossoming Trees. By C. M. Shipman.....	105
An Ideal Outfit for the Amateur. By Gaston M. Alves.....	107
The Jewel of Great Price. By W. F. Oliver.....	111
The Pinhole for Wide Angles. By J. A. Anderson.....	115
The Garden as a Studio. By Oscar Maurer.....	121
Photographing the Forms of Water. By Wilson A. Bentley.....	125
The Construction and Use of a Lens Chart. By R. T. Jeffcott.....	129
Illustrating a Story. By J. Ellsworth Gross.....	137
A Lens Hood and Its Attachments. By Jas. E. Callaway, D.D.S.....	140
A Story with a Moral. By J. W. Little.....	144
Pyro and Its Preservation. By Henry F. Raess.....	148
Film Pack Development. By George Rettig.....	151
The Photographic Magazine and Its Readers. By Favette J. Clute.....	152
Printing Gaslight Papers with Magnesium Ribbon. By W. H. Zerbe.....	161
Notes on Red Sensitive Plates. By Malcom D. Miller, M.D.....	163
Titles. By Russell W. Taft.....	167
In Quest of Snow. By Harry S. Hood.....	170
Paramidophenol as a Tank Developer. By Milton D. Punnett.....	175
An Undiscovered Country. By Mark W. Thompson.....	177
Quick Drying of Negatives. By Ernest A. Turner.....	183
A Cement Sink. By A. B. Stebbins.....	186
A Passepartout Guide. By Richard Trotter Jeffcott.....	190
On Portraiture. By Carl Rau.....	193
A Word About Posing. By Chas. Stillman Taylor.....	196
A Simple Portrait Lamp. By A. W. Weston.....	204
Standard of Excellency. By Geo. D. Jopson.....	207
Ozobrome. By Thomas Manly.....	209
Toned Lantern Slides. By Alfred H. Saunders.....	214
Process Cameras. By J. Arthur H. Hatt.....	218
Etching by Machine. (Communicated).....	223
The Abuse of the Hand Camera. By F. G. P. Benson.....	228
How to Make An Album. By A. S. Hull.....	230
Zeiss Diaphragm Markings. By Harold M. Bennett.....	234
Insect Photography. By J. W. Bandtel.....	239
The New Scenic Route to Yosemite. By Edgar A. Cohen.....	242
What Goes on in a Lens. By Gustav Dietz.....	253
Photography at Sea. By Robt. E. M. Bain.....	257
Two Useful Dodges. By W. H. Brackenridge.....	260
Gum Print Possibilities. By W. H. Thompson.....	262
Painters vs. Photographers. By Otto W. Beck.....	266
Mineral Photography. By L. P. Gratacap.....	273
School Camera Clubs. By George D. Firmin.....	281
Photography at Night. By H. Mortimer-Lamb.....	285
Photographing in Central Park. By F. M. Ingalls.....	293
The Versatility of Photography. By O. V. Lange.....	299
Underground Photography. By J. Wilbur Read.....	307
Print Circulating Societies. By C. W. Canfield.....	313
American Photographic Societies.....	325
United States Weights and Measures.....	329
English Weights and Measures.....	330
Metric System of Weights and Measures.....	331
Conversion Tables.....	332
U. S. System of Diaphragm Numbers f-1 to f-100.....	333
Copyright for Photographs.....	334
Elsden's Tables of Poisons and Antidotes.....	336

Index to Authors.

	PAGE		PAGE
Alves, Gaston M.....	107	Ingalls, F. M.....	293
Anderson, J. A.....	115	Jeffcott, R. T.....	129, 190
Archibald, David Gray.....	42	Jopson, Geo. D.....	207
Bain, R. E. M.....	257	Lakin, Walter W.....	61
Bandtel, J. M.....	239	Lange, O. V.....	299
Beck, O. W.....	266	Levy, Max.....	223
Bennett, H. M.....	234	Little, J. W.....	144
Benson, F. G. P.....	228	Manly, Thos.....	209
Bentley, Wilson A.....	125	Maurer, Oscar.....	121
Boyd, John.....	87	Miller, Malcolm D.....	163
Brackenridge, W. H.....	260	Mortimer-Lamb, H.....	285
Callaway, Jas. E.....	140	Oliver, W. F.....	111
Canfield, C. W.....	313	Punnett, Milton D.....	175
Claudy, C. H.....	45	Raess, Hy. F.....	148
Clute, Fayette J.....	152	Rau, Carl.....	193
Cohen, Edgar A.....	242	Read, J. W.....	307
Cooper, Henry Erle.....	38	Rettig, George.....	151
Davis, W. S.....	51	Saunders, Alfred H.....	214
Delery, Henry C.....	65	Shipman, C. M.....	105
Dietz, Gustav.....	253	Stebbins, A. B.....	186
Dimock, Julian A.....	73	Taft, Russell W.....	167
Duryea, Chester B.....	9	Taylor, Chas. S.....	196
Firmin, Geo. D.....	281	Tebbs, Robert W.....	57
Gassman, H. M.....	71	Thompson, W. H.....	262
Gmeiner, Rev. John.....	27	Thompson, M. W.....	177
Gratacap, L. P.....	273	Toch, Maximilian.....	95
Gross, J. Ellsworth.....	137	Turner, E. A.....	183
Hales, H. W.....	32	Ward, Catharine Weed.....	97
Harrison, R. W.....	35	Weston, A. W.....	204
Hatt, J. A. H.....	218	Whitney, C. M.....	91
Hegarty, J. C.....	79	Willard, Eleanor W.....	21
Hood, Hy. S.....	170	Zerbe, Wm. H.....	160
Hull, A. S.....	230		

Index to Illustrators.

	PAGE		PAGE
Anderson, J. A.....	116, 118	Ellis, W. S.....	206
Bain, R. E. M.....	257	Fair, Hy.....	216
Baker, F. C.....	9, 41, 176	Firmin, Geo. D.....	281, 283
Bandtel, J. M.....	237, 238	Fleckenstein, Louis.....	50, 70, 314
Beam, Geo. L.....	16, 49, 322	Gatch, Helen P.....	303
Beeby, John.....	55	Green, J. E. B.....	17, 165, 289
Bennett, Mrs. J. E. 43, 104, 124,	272	Gross, J. E.....	138, 139
	297	Hales, H. W.....	33
Benson, F. G. P.....	220	Hall, Hy.....	311
Bentley,	125, 127, 128	Hammond, M. O.....	188
Bertling, W. E.....	103, 305	Hargett, A. B.....	143, 164
Bodine, M. L.....	81	Hatt, J. A. H.....	217
Boughton, Alice.....	157	Hegarty, J. C.....	84
Bourgeois, C. S.....	316	Hendrickson, H.....	48
Boyd, John.....	88	Holden, E.....	86
Bray, E. A.....	92, 208	Hood, H. S.....	171, 173
Brookins, D. H.....	31	Hutchinson, I. M.....	304
Brown, Fedora E. D.....	25, 176	Ingalls, F. M.....	292, 295
Bruce, R. S.....	253, 271	Jeffcott, R. T.....	130, 136, 193
Bull, Dr. C. G.....	147, 159, 185, 221	Kaiser, L. M.....	21, 65
Carter, Chas. M.....	321	Krantz, K. Theo.....	42
Clarke, C. E.....	153, 323	Kupper, L. V.....	89
Cohen, E. A.....	241, 252	Lange, O. V.....	298, 301
Conkling, O. C.....	65, 313	Levy, Louis E.....	223, 227
Conyers, H. B.....	114, 306	Lewis, N. F.....	81
Cooke, H. W.....	106, 233, 315	Lifshey, S. H.....	136
Cooper, C. M.....	320	Matthews, Kate.....	62
Cooper, Hy. E.....	71, 72, 162, 284	Maurer, O.....	120, 122, 123
Crowell, W. S.....	284	Morgan, Thos. A.....	12, 96, 321
Dassonville, W. E.....	77	Mortimer-Lamb, H.....	287, 289
Davis, C. H.....	109	Mortimer, F. J.....	312, 321
Davis, W. S.....	51, 53	Muntz, G. K.....	27, 304
Dixon, Jessie B.....	260	Farrish, W. & G.....	35, 114, 160
Dührkoop, R. 10, 26, 40, 48, 64, 72, 81,	155, 200, 203, 233, 278	Pearce, Mrs. W. W. 119, 121, 142,	189
			265, 280
Eickemeyer, Jr., Rudolph.....	264	Pike, Oliver G.....	192
Eiser, Dr. G.....	60, 78	Porterfield, W. H.....	234, 240
Eitel, Theo. E.....	20, 76, 324		

	PAGE		PAGE
Read, J. W.....	307, 310	Thomson, Jas.	68, 291, 318
Reece, Jane.....	338	Toch, M.	94
Robison, Hana	45	Walburn, A. W.	59, 222
Rosenberger, T. L.....	96, 296	Wallace, W. H.....	213
Sargent, John S.....	267, 269	Ward, C. W.	98, 101
Semon, Carle	32, 169	Watts, Rev. E. G.....	195
Shipman, C. M.....	105	Weeks, Robt. E.....	69, 83, 110, 279
Smith, N. G.....	272, 277	Weston, A. W.....	205
Stebbins, A. B.....	302	Whitehead, J. M.....	44, 148
Swan, Chas. A.....	63	Whitmak, C. C.....	282
Taft, R. W.....	166, 168	Whitney, C. M.....	40
Tebbs, R. W.....	56, 58	Willard, Mrs. E. W.....	105, 257, 297
Thompson, W. H.....	128	Zerbe, W. H.....	39, 145
Thompstone, M. W.....	177, 183	Zierath, Dr. W. F.....	108, 169, 174

Index to Advertisers.

	PAGE
AnSCO Co.	iii—x
Air Brush Mfg. Co.....	li
Adams, J. F.....	lv
American Aristotype Division.....	4th cover
Albemarle Paper Mfg. Co.....	Insert
Autotype Co., The.....	Insert
Burke & James.....	xxvi, xxvii
Bausch & Lomb Optical Co.....	xxviii
Baker & Taylor Co.....	xlvi
Berlin Anilin Works.....	l
Cramer Dry Plate Co.....	xlvi
Camera Craft	xlvi
Crown Optical Co.....	l
Century Camera Division.....	li
Clark & Freed.....	lii
Curtis & Cameron.....	lvi
Chicago Photo Scenic Co.....	Insert
Carmichael, Fercival.....	3rd cover
Eastman Kodak Co.....	xxii—xxv
Folmer & Schwing Division.....	xlvi
Flinch Co., Ferdinand	lv
Goerz American Optical Co., C. P.....	xv, xvi
Greenwood, Miles	lv
Hammer Dry Plate Co.....	xi
Higgins & Co., Chas. M.....	liv
Japanese Water Color Co.....	lv
Kalamazoo Shutter Co.....	liii
Levy, Max	xxix
Murphy, Inc., Geo.....	2nd cover, i, ii, xxx, xxxix—xliii
Multispeed Shutter Co.....	xii, xiii
Merck & Co.....	xxxviii
Meyrowitz, E. B.....	xlvi
Milton Bradley Co.....	xlvi
Millard, Geo. E.....	xlvi
Mellen Photo Co.....	lii
Mallinckrodt Chemical Works.....	liv
Michigan Shutter Co.....	liv
New York Camera Exchange.....	xxxvii
Norman Photo Paper Co.....	xlvi
Nehring, Lens.....	liii
Pinkham & Smith Co.....	xlvi
Powers, Weightman, Rosengarten Co.....	xlvi
Rochester Optical Division.....	xxxix
Robey-French Co.....	xxxii, xxxiii
Rough & Caldwell Co.....	xxxiv
Ross Lenses.....	2nd cover
Schering, E.....	xiv
Sprague & Hathaway Co.....	xxxvi
Standard Paper Mfg. Co.....	Insert
Taylor, Taylor & Hobson, Ltd.....	xxxv
Tennant and Ward.....	Insert
White Co., Otis C.....	xlvi
Wollensak Optical Co.....	lii
Wolff & Dolan.....	liii

REFERENCE CALENDAR FOR THREE YEARS.

1907

	S	M	T	W	T	F	S		S	M	T	W	T	F	S		S	M	T	W	T	F	S
Jan.	..	..	1	2	3	4	5	May	..	..	1	2	3	4	5	Sept.	1	2	3	4	5	6	7
	6	7	8	9	10	11	12		5	6	7	8	9	10	11		8	9	10	11	12	13	14
	13	14	15	16	17	18	19		12	13	14	15	16	17	18		15	16	17	18	19	20	21
	20	21	22	23	24	25	26		19	20	21	22	23	24	25		22	23	24	25	26	27	28
	27	28	29	30	31	..	..		26	27	28	29	30	31	..		29	30	..	..	..	..	..
Feb.	..	..	1	2	..	..	..	June	..	..	1	2	3	4	5	Oct.	..	1	2	3	4	5	6
	3	4	5	6	7	8	9		2	3	4	5	6	7	8		6	7	8	9	10	11	12
	10	11	12	13	14	15	16		9	10	11	12	13	14	15		13	14	15	16	17	18	19
	17	18	19	20	21	22	23		16	17	18	19	20	21	22		20	21	22	23	24	25	26
	24	25	26	27	28	..	..		23	24	25	26	27	28	29		27	28	29	30	31	..	..
Mar.	..	..	1	2	..	..	..	July	..	..	1	2	3	4	5	Nov.	3	4	5	6	7	8	9
	3	4	5	6	7	8	9		7	8	9	10	11	12	13		10	11	12	13	14	15	16
	10	11	12	13	14	15	16		14	15	16	17	18	19	20		17	18	19	20	21	22	23
	17	18	19	20	21	22	23		21	22	23	24	25	26	27		24	25	26	27	28	29	30
	24	25	26	27	28	29	30		28	29	30	31	..	..	..		..	..	..	..	..	..	..
	31	..	..	..	..	..	..	Aug.	..	..	1	2	3	4	5	Dec.	1	2	3	4	5	6	7
April	..	1	2	3	4	5	6		4	5	6	7	8	9	10		8	9	10	11	12	13	14
	7	8	9	10	11	12	13		11	12	13	14	15	16	17		15	16	17	18	19	20	21
	14	15	16	17	18	19	20		18	19	20	21	22	23	24		22	23	24	25	26	27	28
	21	22	23	24	25	26	27		25	26	27	28	29	30	31		29	30	31	..	..	..	..
	28	29	30	31	..	..	..		..	..	..	..	..	..	..		..	..	..	..	..	..	..

1908

	S	M	T	W	T	F	S		S	M	T	W	T	F	S		S	M	T	W	T	F	S	
Jan.	1	2	3	4	May	1	2	3	Sept.	..	1	2	3	4	5	6	7
	5	6	7	8	9	10	11		3	4	5	6	7	8	9		6	7	8	9	10	11	12	
	12	13	14	15	16	17	18		10	11	12	13	14	15	16		13	14	15	16	17	18	19	
	19	20	21	22	23	24	25		17	18	19	20	21	22	23		20	21	22	23	24	25	26	
	26	27	28	29	30	31	..		24	25	26	27	28	29	30		27	28	29	30	..	..	..
Feb.	1	2	June	1	2	3	Oct.	..	1	2	3	4	5	6	7
	2	3	4	5	6	7	8		1	2	3	4	5	6	7		4	5	6	7	8	9	10	
	9	10	11	12	13	14	15		7	8	9	10	11	12	13		11	12	13	14	15	16	17	
	16	17	18	19	20	21	22		14	15	16	17	18	19	20		18	19	20	21	22	23	24	
	23	24	25	26	27	28	29		21	22	23	24	25	26	27		25	26	27	28	29	30	31	
									28	29	30	..	..	..	..					
Mar.	1	2	3	4	5	6	7	July	1	2	3	4	Nov.	1	2	3	4	5	6	7	8
	8	9	10	11	12	13	14		5	6	7	8	9	10	11		8	9	10	11	12	13	14	
	15	16	17	18	19	20	21		12	13	14	15	16	17	18		15	16	17	18	19	20	21	
	22	23	24	25	26	27	28		19	20	21	22	23	24	25		22	23	24	25	26	27	28	
	29	30	31	..	..	..	..		26	27	28	29	30	31	..		29	30	..	..	..	..	..
April	1	2	3	4	5	Aug.	1	2	3	Dec.	..	1	2	3	4	5	6	7
	5	6	7	8	9	10	11		2	3	4	5	6	7	8		6	7	8	9	10	11	12	
	12	13	14	15	16	17	18		9	10	11	12	13	14	15		13	14	15	16	17	18	19	
	19	20	21	22	23	24	25		16	17	18	19	20	21	22		20	21	22	23	24	25	26	
	26	27	28	29	30	..	..		23	24	25	26	27	28	29		27	28	29	30	31	..	..
	..	..	..	..	..	..	..		30	31	..	..	..	..	..		..	..	..	..	..	..	..

1909

	S	M	T	W	T	F	S		S	M	T	W	T	F	S		S	M	T	W	T	F	S
Jan.	..	3	4	5	6	7	8	9	1	2													
	10	11	12	13	14	15	16	17															
	17	18	19	20	21	22	23	24															
	24	25	26	27	28	29	30	31															
Feb.	..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
Mar.	..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
April	..	..	..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	18	19	20	21	22	23	24	25	26	27	28	29	30	31									
	25	26	27	28	29	30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
May	..	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							
June	..	..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	12	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
July	..	..	..	..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Aug.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
	22	23	24	25	26	27	28	29	30	31													
	29	30	31																				
Sept.	..	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Oct.	..	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Nov.	..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
Dec.	..	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
	19	20	21	22	23	24	25	26	27	28	29	30	31										

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F. C. Baker.

THE FLOCK.

The American Annual of Photography . . 1908

THE SIZE OF THE CAMERA.

By CHESTER B. DURYEA.

WHILE satisfactory choice of size for general utility cameras might seem at first sight rather an arbitrary matter, dependent more on mere personal fancy than upon important philosophical considerations, such in fact is not really the case. This statement is hardly startling news to the initiated, but a fairly broad observation warrants the conclusion that there is much confusion and vagueness of thought respecting this question among even tolerably experienced photographers, and of course the tyro, unless well advised, is at a great disadvantage. There is naturally room for considerable difference of enlightened opinion regarding the details of the subject.

These incomplete and tentative notes are only intended to serve as an aid to the relatively inexperienced, but not wholly uninformed, in order to help them to avoid those unquestionably incorrect ideas and vacillating courses of procedure relating to the matter, which we have all more or less shared, and which lead to so much discouragement, unnecessary expense, and inferior results, through the use of unsuitable apparatus.

At the very outset it is well to remember that, aside from the question of portability and initial outlay, it is not so much the size of cameras and plates which makes a rational selection necessary, if photography is to be pursued effectively, both as regards results and the facility of their attainment, as it is those limitations imposed by the widely varying optical qualities of lenses of different foci and relative apertures. In view of the

obvious absurdity of customarily using portable cameras built for plates larger than the ones most suitable for the lenses generally employed, cameras and lenses will be considered here as related to each other in their most mutually efficient way.

For the sake of simplicity even at the cost of some repetition, stand and hand cameras will be treated separately, although there is no sharp line of demarcation between the two varieties. In this classification, irrespective of size, stand cameras are understood to be all portable cameras generally used upon a stand, with exposures from about one-eighth second up; and hand cameras those customarily operated without artificial support, with exposures ranging down from about one-eighth second to very brief intervals of time. Furthermore, as the factor of expense is a purely personal one, it will be referred to only incidentally, and not given the same force as the more uniform element of portability, and those fixed considerations based upon optical and chemical laws.

Stand Cameras. — Convenient divisions would here seem to be: 1st. — Cameras taking plates from $3\frac{1}{4}'' \times 4\frac{1}{4}''$ to $6\frac{1}{2}'' \times 8\frac{1}{2}''$. 2nd. — $8'' \times 10''$ cameras. 3rd. — Cameras larger than $8'' \times 10''$. The reasons for this classification will appear as we proceed.

By now no doubt every one knows that relatively long focus lenses are necessary in order to get pleasing perspective, simple arrangement, etc.; lenses with equivalent foci certainly not less than the diagonal of the plate employed, and far better for general use about double the base line of the picture. Moreover, where bodies of water are situated in the foreground, where moving clouds, wreaths of mist, and various wind motions are present, very brief exposures ($\frac{1}{4}$ second or less) are frequently unavoidable. Besides, orthochromatic plates with appropriate color screens, increasing the normal exposure from three to eighteen or more times, are likewise no longer considered optional, but on the contrary quite essential to reasonably correct rendition of multi-colored subjects.

Applying the principle of these considerations to the whole-plate size ($6\frac{1}{2} \times 8\frac{1}{2}$) many find that the most useful lenses approach or even exceed 16 inches equivalent focus. Now substantially normal exposure is, of course, the most important



THE DIFFICULT LETTER

R. DÜHRKOOP.

factor in successful camera practice. Bearing in mind the frequent restrictions referred to respecting length of exposure, and the generally necessary use of color screens, experience teaches that $f/12.5$ is about the smallest stop that can be habitually used with whole plate lenses in comprehensive stand camera work when fully exposing plates.

Here we reach the first justification of our divisions, which is that lenses exceeding about 14 or 15 inches equivalent foci have so little depth of field at the required $f/12.5$, that many of our whole plate negatives making direct prints closely approximating our predetermined effects, break down in enlarging into something very different in appearance, often decidedly disappointing. At any rate the preconceived result is lost.

Hence, we have here reached a natural limit. A limit characterized by results of sufficient size to be very satisfactory for book illustrations, portfolios, etc., but too small for really effective appearance upon the wall in more than exceptional cases, and yet at the same time unfortunately frequently inherently unsuitable for enlarging purposes. Simultaneously, the limit of ordinary portability of camera and accessories, lenses, shutter, plate-holders and plates, focussing glass and cloth, tripod, etc., has also been reached.

Here then we must either reconcile these inharmonious conditions by providing two or more sets of apparatus of differing dimensions, or make a really radical choice of one all-round size. This choice, from the nature of things, will be more or less a compromise, but not necessarily a disappointing one. If it be in the direction of smaller instruments, the optical advantages will increase in much greater degree than plate dimensions are reduced, and the convenience and general ease of working the smaller sizes are most grateful.

The optical advantages are of course due to the fact that on the same basis of relative aperture, as we arithmetically reduce the equivalent focal length, we gain in depth of focus and field in geometrical ratios. This is an enormous advantage from an enlarging point of view. Moreover, on the same basis of depth our relative apertures and speed are vastly increased, greatly widening the choice of subject and lighting.

In general terms it may be said that the smaller the original negative, other things being proportionately equal, the more



THE ROAD THROUGH
THE WOODS—WINTER.

THOMAS A. MORGAN.

suitable it is for a given enlargement, provided that in enlarging the stage of granularity due to the structure of the silver image is not reached. However, in actual practice $3\frac{1}{4} \times 4\frac{1}{4}$ inches may safely be designated the minimum limit; 4×5 inches has a decided advantage in that it yields more presentable direct prints, but if systematic enlarging is adopted, larger than this, it is, perhaps, best not to go. The comparatively unimportant increase in size of half plate and 5×7 inches prints over 4×5 inches does not satisfy, and the optical loss for enlarging purposes, and increase of weight, bulk, and expense are decidedly great.

I would, therefore, venture to suggest, if but one general utility camera can be had, that great stress be laid first upon the question of portability, because the annoyance of excessive weight and unwieldiness during manipulation are constant and will in time wear out all but the keenest enthusiasm.

As a corollary, whether or not one is willing to enlarge much or little appears to come in order of force. If you are prepared for much enlarging, it seems conservative to recommend 4×5 inches as the best choice.

On the other hand if you can be generally contented with the really excellent dimensions of direct prints from whole-plate negatives; only wish to occasionally enlarge some especially successful result for home or exhibition walls, or confine yourself for enlarging purposes to appropriate subjects; and, in addition, can be serene under moderately wearisome physical burdens, then in that case you will probably congratulate yourself upon the choice of their classic size.

If, however, you desire to be in position to see most of your direct work upon the walls; can remain tranquil with a moderate yet effective size for that purpose, even when your modest prints are hung in the company of veritable monsters; can further reconcile yourself to ever present punishing weight and bulk, then the 8×10 inch size, notwithstanding its inherent restrictions regarding subjects and lighting, will very likely prove the most permanently satisfactory of any that can be worked for general purposes. Of course, the negatives, as a rule, will not be so fit for amplification as those from whole plate cameras.

Above 8×10 inches the increase in weight and bulk are ex-

cessive. But most serious of all, the depth of field, etc., of the associated lenses become so slight that the use of smaller stops is imperative, greatly increasing time of exposure, and very seriously limiting choice of subject, lighting, and other conditions. Inasmuch, therefore, as it may safely be said that sizes larger than 8 x 10 inches are unsuitable for general use, they will be dismissed from further consideration here.

Referring again, in passing, to whole-plate cameras, attention should be called to the fact that broadly speaking telephoto negatives do not enlarge well, but that they can be conveniently taken direct up to and including whole-plate size.

Hand Cameras.—With stand cameras we had to deal with size in relation to portability, only on a basis of plate dimensions, and not with respect to form or type of camera, i. e., whether box or folding. The double consideration here presents itself and involves not only the portability of instruments, but their essential suitability for various purposes as well. The optical restrictions,* however, are of the same nature for all, except those of the reflex type. Our main classification then is:

First, box scale-focusing hand cameras; Second, folding hand cameras; Third, reflex hand cameras, exclusively of the box type.

Simplicity and clearness suggest that we consider size first from an optical point of view, as limitations of this kind apply equally to all hand cameras of our first two divisions. This having been done we will examine the question in relation to bulk and weight of apparatus according to its type, i. e., box or folding. Proceeding in this fashion we are at once confronted with seriously conflicting conditions.

First.—Exposures must not exceed about one-eighth second, because aside from any movement of or in the subject itself, one-eighth second is nearly if not quite the maximum exposure period that can be relied upon to yield sharp negatives with cameras operated while held in the hands. The average of judicious hand cameras exposures, exclusive of high speed work, may be placed at from about one-sixteenth second to $1/32$ second.

Second.—To get fully timed negatives on average hand camera subjects with such brief exposures, relative apertures of $f/8$ or greater must be generally used. This involves less

specific depth of field than available in stand camera work, where smaller diaphragms may be employed.

Third.—Great actual depth is necessary, as focussing can be only approximately estimated, instead of adjusted with the precision possible in the use of stand cameras.

Fourth.—The effects due to the use of light color screens and orthochromatic plates are nearly as often indicated as with stand camera subjects, further intensifying the wisdom of taking full advantage of the exposure power of large aperture lenses, compensating for their characteristic slight depth of field by shortening focus with corresponding reduction in plate size, and relying upon enlargements for the final dimensions of our prints.

These controlling factors then, limit us to the use of lenses of much shorter foci than permissible for stand cameras, because of the necessity of compensating for less inherent depth due to increased relative lens apertures, and also to provide for errors in the visual estimation of distances.*

Recalling now the limitations imposed upon the relation of focal length to size of plate by the laws of pleasing perspective, etc., we are forced to the conclusion that for hand cameras of the first and second type, 4 x 5 inches is about the maximum limit for general scale focussing work. Half-plate and 5 x 7 inches are entirely too large.

On the other hand, below quarter plate, direct prints are too insignificant. We then, irrespective of box or folding form, should choose $3\frac{1}{4} \times 4\frac{1}{4}$ plate or 4 x 5 inches, or their near equivalents. Between these two sizes, other things being relatively equal, quarter plate gives more depth for enlarging and for greater margin of error in estimating distances, but direct results, unless for memorandum purposes, are a trifle too minute. 4 x 5 inches yields more satisfactory contact prints with increased latitude for trimming, permits the peculiar printing quality of such papers as platinum to be better availed of, and still retains all the optical qualities needed for general enlarging. Where portability is of paramount importance as in touring, etc., quarter plate should be selected, otherwise perhaps 4 x 5 inches. Unobtrusiveness and suitability for street work, etc., are more dependent upon type and design of camera than mere size.



A JAPANESE EFFECT. J. Edward B. Greene.



CATHEDRAL SPIRES, COLO.

GEO. L. BEAM.

Box or Folding Form.—If much work in public places, taking of natural groups, etc., is projected, a small and reliable form of box camera such as a Newman & Guardia quarter plate instrument is to be preferred. The excess of weight and bulk over say a folding film camera is, in the opinion of many more than counterbalanced by its greater efficiency in use. Aside from the capital shutter fitted by its makers to this particular instrument, the ever ready condition of small box cameras in general, and the inconspicuous character of their appearance and that of their expeditious manipulation, as compared with extended folding cameras, are exceedingly important advantages in this class of work.

If, however, portability must dominate and street work is not particularly desired, a folding camera should unhesitatingly be chosen. A well adjusted 3A. F. P. K. should be found very satisfactory, especially if the regular shutter be replaced by one having higher light passing efficiency. Bruns and Deckle, of Munich, Germany make an excellent one.

Home Work.—Work about home is really subject to general considerations governing touring, only that the element of portability is not quite so important. One is apt to find that because of the ease of the thing the folding camera is often carried, but on account of the bother and conspicuousness of its use, it is frequently brought back innocent of results. The box form when taken is almost invariably put to some good purpose. At any rate for home use, where doubt is felt regarding which size to select, 4 x 5 inch is a safe choice, whether box or folding, for plates or films. A plan frequently employed with great satisfaction is to use quarter plate lenses on 4 x 5 inch plates, rendering painful finder inspection unnecessary, and greatly facilitating rapid work. Results are of course freely trimmed.

Reflex Cameras.—We have now an exclusively box form of camera to consider. The reflex type of camera differs from the ordinary kind of box mainly in the following well known particulars.

The image being visible and focusable upon a secondary ground glass screen, the same restrictions do not obtain regarding depth of field (aside from the enlargement factor), and lenses of longer foci or larger apertures, either or both, may be

used. This permits larger plates without sacrifice to good perspective, etc. And further, the great light passing power of the focal plane shutters almost invariably fitted (except with twin-lens cameras) enables smaller stops to be used again permitting augmentation of plate size, with proportionate increase of focal length.

Bearing in mind the question of enlargement suitability and giving full force to the excess of bulk and weight of reflex cameras over scale focussing instruments of the ordinary box form taking the same size plates, 5 x 7 inches, should be considered the extreme limit for a camera of the reflex type for ordinary work. Such an apparatus is decidedly ponderous, and unless contented with 5 x 7 inch prints, the far greater portability of the 4 x 5 inch size, the much superior enlarging qualities of the negatives it yields, and the greater practicable reserve speed of its lenses, should insure its selection. The quarter plate size of this camera is of course optional, but the preponderance of preference is in favor of 4 x 5 inches. This type is not particularly desirable for touring. The high co-efficiency of their focal plane shutters in connection with the exceedingly rapid lenses available make these cameras as indispensable for obtaining fully exposed negatives of feebly lighted subjects, or where color screens, or medium speed plates are used, as they are for high speed work.

Where systematic enlarging is intended, care must of course be given to producing a certain well known technical type of negative. If bromide paper is not to be relied upon, but enlarged negatives made from the small originals, particularly if daylight illumination is to be employed for the purpose, this special quality of the originals need not diverge much from the normal, nor unfit them for any modern contact printing process whatever, unless perhaps the carbon be excepted.

It will be noted that in connection with camera size, etc., no direct reference has been made to the relative merits of direct or indirect prints, or to the power large aperture lenses convey for rendition of atmospheric effect, differentiation of planes, softness of definition, and the like. To a certain extent, however, considerations relating to these matters have been incorporated in the ideas expressed respecting large apertures, depth of field, enlarging suitability, etc. An analysis of the ques-

tion here would lead either to undue extension of an already somewhat lengthy dissertation, or else involvement in confusion; even if, indeed, it would not be useless to attempt to apply rules to matters so much dependent upon varying personal taste.

While not strictly germane to the present subject, I can not forbear emphasizing the great necessity in hand camera work of reliable shutters of the highest co-efficiency, particularly when films are used, usually considerably slower than fastest plates.

Finally, it is certain that whether the chosen size is large or small, or prove to be the best all round choice or not, it will be particularly well adapted to some special purpose, and the success of results in any case will depend mainly upon yourself.

It is not expected that all will agree with the expressions of this fragmentary paper. When dealing with subjects of this character it is, at times, very difficult to determine where actual knowledge ceases and mere opinion begins. But, if these imperfect notes serve no other purpose than to assist some few others in arranging and clarifying their own ideas, even if only by disagreeing with mine, my effort will have been worth while.



A LEAFY GLADE.

THEO. F. EITEL.



A WOODLAND PATH.

L. M. KAISER.

THE POSSIBILITIES OF KALLITYPE.

By ELEANOR W. WILLARD.

FOR several years I have been interested in the Kallitype process, having first made experiments with Mr. Hall's formulæ as published in *The Photo-Miniature*, No. 47. Very perfect and beautiful prints may be made by his method, but for simplicity the formulæ recently published by Mr. James Thomson in October, '06, *Photo Era*, and those which I understand will be soon made public through *The Photo-Miniature*, are superior. With care about cleanliness of manipulation, and purity of chemicals, prints should be obtained which are strong rivals of platinum.

Many people have the idea that the home preparation of printing papers is a mussy performance, and that a great deal of labor and paraphernalia are involved. This is not at all true. Two wide-mouthed bottles into which the proper chemi-

cals have been literally "dumped," are the chief stock in trade. One holds the sensitizer, the other the developer. Add to this equipment a piece of white velvet about three inches square folded over an old celluloid film, and the two edges brought together and held by a couple of small sticks, bound round by rubber bands, and you have an admirable coating brush. The velvet may be washed out and used many times before being renewed.

All aside from the economy of the process, which compared with platinum is great, there is a fascinating opportunity in it for experimenting with different kinds of paper.

The papers most suitable perhaps for general use are the ledger papers, Brown's, Weston's, or that known as general ledger, which may be obtained of any wholesale paper house. A paper which gives a result almost identical to smooth platinum is that called "wedding stock bristol," smooth finish. Any "sized" paper may be used, such as ordinary letter papers, while certain unique effects may be obtained by using unsized papers of various tints, and applying the size one's self. Next to the ledger papers, the Whatman drawing papers are the most serviceable, both in the smooth and the rough, but they require a coat or two of arrowroot size. Delightfully broad effects are possible with them.

But the papers that are most bewitching to work with are the Japanese tissues. They of course require extra care in the handling, and demand about three coats of sizing, but the results are quite worth the trouble. I believe that as fine prints may be obtained on Japanese tissues with Kallitype as are possible on the very expensive tissues commercially coated with platinum. That with which I have had the best success, is called "water-color tissue," and is to be obtained through Devoe & Raynolds. A gelatine sizing is best for these, the arrowroot being too "soft." Coating is best done on a sheet of glass. One may dry between coatings by a fire or lamp and soon have a number of sheets ready for sensitizing. When ready for developing it is advisable to pin the tissue to a piece of heavier white paper, for the sake of convenience in handling, as well as to be able to judge the depth of the print by having the white surface underneath. Otherwise the tissue is likely to give one trouble by turning on itself in the developer,

and one is apt to misjudge the printing, and get it too dark. Care should be taken in pinning up the tissue to dry to leave plenty of slack, as it expands when wet and shrinks again in drying and if it draws between the pins it will inevitably cause a cockle along the edge which will prevent flat mounting later.

The coating formula used for the tissue and for general work is that which Mr. Thomson designates as *Formula A*, and is as follows:

Distilled water.....	1 ounce
Citrate of iron and ammonia.....	32 grains
Ferric oxalate.....	16 "
Oxalate of potash.....	33 "
Oxalic acid.....	10 "
Chloride of copper.....	4 "
Citric acid.....	4 "
Silver nitrate.....	10 "
Gum arabic.....	10 "
Bichromate of potash, 5% solution.....	10 drops

Put in the chemicals in the order named without waiting for each to dissolve. Let the mixture stand quiet for 48 hours, then shake thoroughly, filter through cotton, and always shake before using.

The developer (stock solution) is:

Distilled water.....	1 ounce
Citric acid.....	10 grains
Silver nitrate.....	40 "
Phosphate of soda.....	1½ "

To seven drams of water take one dram stock solution, and add about one grain of oxalic acid, or just enough to give good blacks. Too much will give faded prints. Clear, after rinsing in hypo 1½ grains to the ounce. For tissues ½ grain to the ounce is better.

Other formulæ, and detailed directions may be found in the valuable articles Mr. Thomson has contributed to the magazines from time to time.

All operations of coating and developing may be carried on in daylight, and when printing use about the same precautions as for platinum. The sensibility of the paper varies with different coatings and formulæ, but as a rule I have found it to be a little slower than platinum.

For work with tissues, a fairly strong negative of good contrasts is best adapted, although by varying the formulæ slightly, coatings may be adapted to negatives of varying densities and

contrasts. It is well to remember that more contrast may always be secured by adding more bichromate of potash to the sensitizer.

The gelatine size for these tissues may be that with chrome alum, usually recommended for carbon supports, or, what is probably better, the following: Water, 15 ounces; gelatine, 75 grains; alum, 45 grains; methylated spirit, $3\frac{1}{2}$ ounces.

There will of course be troubles. There will occasionally be unaccountable spots and markings, but when such occur, and careful filtering, shaking of solutions, and smooth coating does not remedy matters, it is best to throw the mixture away and begin over again. The cheapness of the ingredients renders one able to do so with a fairly clear conscience. Often a fresh lot of diluted developer will be the remedy.

In laying in the stock of chemicals, special care should be taken to secure the ferric oxalate in right condition. None of the other chemicals display any crankiness, but the ferric oxalate calls for close watching. If right when bought, it will remain in good condition with ordinary care for months, or even years, but if wrong, it will get more degenerate with every day. It should come in glistening brownish-green scales, which show no tendency to mat together, or to cling to the sides of the bottle. Mallinkrodt puts up the right article, if one can only obtain it fresh—a feat not always easily achieved outside of the large cities.

Having once obtained the supply of chemicals, at a total cost of about a dollar and a half, one has the materials for a great many messes of sensitizer and developer, and endless fascinating possibilities for home experiment.



SUMMER DAYS.

FEDORA E. D. BROWN.



FIGURE PORTRAIT.

R. DÜHRKOOP.



SATURDAY AFTERNOON.

G. K. MUNTZ.

INTENSIFICATION: THE BEST METHOD

By REV. JOHN GMEINER.



INCE dry-plates are in use intensifiers, like developers, have appeared in bewildering numbers. Which is the best for all-around purposes?

The writer has tried about all intensifiers or intensifying methods that have become prominent since the appearance of dry plates and seemed worth trying and, after many experiments, decided years ago on using a certain method of intensification which, at least for his own purposes, he considers the best for negatives, lantern slides and bromide papers.

Some intensifiers give more intensification than one occasionally knows what to do with; others exaggerate the contrasts to an unpleasant degree. Some require a most careful manipulation, and a little oversight results in failure and spoiling of the negative, slide or bromide paper. Some give but

little intensification, and a repetition of the process improves matters little or not at all. Some methods of intensification can be used but once, and if the result is unsatisfactory, there is nothing else to be done but to be content. After the use of some intensifiers, reduction, if desirable, is out of question. Some intensifiers are inclined to stain the film or spoil it later. Some intensifications are not stable but change in the course of time, usually for the worse. Some intensifiers may do for negatives but not for lantern slides or bromide papers. Some methods of intensification require more time and patience than average human beings have at their disposal, and some are so filthy and nauseous that they should be used only in back yards where filth and stench would be less objectionable than in a room.

An all-around good method of intensification ought to have the following qualifications: It ought to be cleanly enough for average civilized people and easy enough so as not to rile one's good humor. It ought not to include too dangerous poisons. It ought to give a fair, proportional and certain amount of permanent intensification. It ought to leave the film clean and clear. It ought to be possible to repeat the process as often as necessary, and to reduce the intensity, if desirable. An all-around good method of intensification should be applicable not only to negatives but also to lantern slides and bromide papers.

After various experiments the writer has found about everyone of the generally recommended intensifiers wanting in some one or other of the qualifications just mentioned. The one method of intensification which comes nearest up to the ideal of the writer is that advocated by Chapman Jones, were it not for the practical difficulties attending it. Mr. Jones says in his "Introduction to the Science and Practice of Photography," page 201, London, 1895: "The only method of intensification that is theoretically and practically simple, that gives an image of known and stable composition with a substantial but not too great an increase of density, that may be repeated any number of times upon the same negative so that any density may be obtained in the end and that can be depended upon in every desirable way, consists in the application of ferrous oxalate to the image bleached by mercuric chloride."

Mr. Jones has thoroughly investigated the subject of intensification and may be considered an authority on the reliability of the mercurial method of intensification, but his particular process presents some practical difficulties, which, no doubt, also others, besides the writer, have found. The "Year Book of Photography," 1898, page 185, observes: "Ferrous oxalate, though possibly the theoretically correct blackening agent, is of little or no value practically." To use ferrous oxalate for the purpose indicated, it would be necessary to have a quantity of distilled water on hand, which many have not got, and to use extra trays and an extra room or place, so as not to get any of the iron solution where it is not wanted.

In searching for the best method of intensification it would seem to be advisable to adhere to mercurial intensification and to look for another blackening agent that possesses the good qualities of ferrous oxalate without its practical inconveniences. Quite naturally the use of ordinary alkaline developers suggest itself to take the place of ferrous oxalate. "Such procedure," says Mr. Jones, "certainly leaves a pure metallic image, but in no case with a great number of different formulæ tested by the author was the whole of the metals left behind. Generally from twenty to forty per cent. of the mercury was dissolved out by the developer."

Even if so, a good and permanent mercurial intensification of from sixty to eighty per cent. was gained.

Now the question is, may not an alkaline developer be so compounded as to reduce the loss of mercury to practically unnoticeable proportions? What ingredients of the developer dissolve out mercury? It seems to be the sulphite and the sodium carbonate, and it seems to the writer that these two ingredients may be sufficiently reduced so that they cannot dissolve out much mercury during the comparatively short time the blackening is going on. Acting on this view the writer years ago adopted substantially the following method of intensification and has found nothing better since.

First bleach the film in the following solution:

Mercury bichloride.....	2 drams
Potassium bromide.....	2 "
Water to make.....	16 ounces
Hydrochloric acid.....	16 drops

This solution is easily prepared, or any good druggist will

prepare it. It keeps indefinitely, especially if kept in a dark place or if some dark paper is wrapped around the bottle. Put as much of the solution as is required into another bottle and use it as long as it works sufficiently well. When it begins to work too slowly, pour off about one-half of the used solution and add as much again from the unused solution.

After the plate is bleached give it one washing, then put it into a strong solution of common salt for about three minutes. This seems to have a clearing effect. After this give it yet about three washings at short intervals.

Next pour on the following developer :

Hydrochinon	1 grain
Sodium sulphite.....	4 "
Potassium bromide.....	1 "
Acetone	5 minims
(Or, instead of acetone, sodium carbonate, crystals	
	2 grains
Water to make	1 ounce.

If it should seem necessary, add later the same amount of hydrochinon with sulphite and acetone, or sodium carbonate, as indicated above, but no potass bromide. This developer is easily prepared and keeps well in the following separate solutions :

Hydrochinon, 1 grain ; sulphite, 4 grains ; water to 1 dram or 60 minims.

Sodium carbonate and potassium bromide each in 1:10 solution.

Like the bleaching solution the developer may always be kept on hand ready for immediate use. After redeveloping the plate or bromide paper give yet three washings at short intervals, then dry it.

The result will be a good, clean and permanent intensification, and if not sufficient, the process may be repeated indefinitely with continual increase of intensification. After repeated intensifications the tone changes somewhat towards grayish. With the amount of potassium bromide indicated in the developer no "pinholes" will appear.

The bleaching and developing should be done in a rather weak light to prevent mercury stains, which, if they should appear, are usually of little consequence.

The developer ought to be at about 70 to 75 degs. Fahr. to work well. Rocking the tray during bleaching and developing

should be done, especially at the beginning of the bleaching and darkening, to get even results. If the water used for washing the bleached plate is strongly alkaline it ought to be neutralized or slightly acidified with hydrochloric or citric acid before using.

This method of intensification may not be the best possible, but it is the best all around the writer knows of.




A GOOD BREEZE.

D. H. BROOKINS.

FOCAL PLANE CAMERAS.

By H. W. HALES.

OTWITHSTANDING the many advantages of the focal plane camera and its great superiority for most of the ordinary work of the photographer, there are still many who think that it is only applicable to certain classes of work and some who think it is only useful for instantaneous work. It is to correct or modify these views that these lines have been written, and those who have had experience with focal plane work will certainly endorse most of the opinions of the writer.

One great advantage of focal plane cameras is—or should be—their non-liability to get out of order. Any person using a good curtain shutter of almost any type cannot help noticing its reliability as compared to almost any other type of shutter. I am aware that there are some focal plane shutters and cameras on the market with such an array of cogs, tapes and gears that go to make the adjustable slit, that they are an annoyance to their owners and a constant source of trouble. There is no need of such complications in most cases, however, and if the camera and shutter is well made it is astonishing to those who have never had any experience, what may be done without any adjustable slit whatever.

There is no doubt in my mind that the coming type of camera for the serious worker who wishes to obtain the best possible results, or the busy professional who cannot afford to waste any time or money, is a camera combining the ordinary type of folding camera with the focal plane shutter. Such a camera will do all that the ordinary camera can do, is not too bulky to be carried around and when any object presents itself that calls for high speed the operator is equal to the emergency at once. Exposures as slow as one-tenth of a second can be made with great ease and this is as long an exposure as can be usually made steadily by holding in the hands. From this any speed can be obtained that is desired and when the highest speed of one-fifteen hundredth is used such objects



THE BRIGAND.

Carle Semon.



H. W. HALES.

Examples showing the greater light efficiency of the focal plane shutter as well as its usefulness for ordinary and movement work.

as flying birds, race horses in motion, etc., are easily obtained.

Even for tripod work much of the valuable time of the operator can be saved by opening up his camera, looking at the view and then if he decides to take it (using his tripod) do so. This advantage alone is very great and no one who once gets used to this will ever be satisfied with any other way.

Much has been said and written about focal plane photography in Europe where a special study has been made of this class of work for years, but in this country it may be said to be only in its infancy, and while there are a larger number now taking it up there is no doubt that much more may be done to advantage, and there is a large field for the intelligent and careful worker, especially if he is thoughtful and painstaking.

One caution is necessary in order to work the focal plane camera to advantage and that is not to use too high a shutter speed to start with. Learn to know somewhere near what speed your object requires and endeavor to give it all the time consistent with the subject. Almost all new workers in this line use too high a speed at first as it seems so fascinating to the average worker to be able to use the high speed, that he uses it whether it is necessary or not. Bear in mind that although the light intensity of the focal plane shutter is far superior to any other, still there is a limit even to this, and it is not desirable to have an under exposed negative if it can be avoided. It is better to show even a little motion in the picture rather than to have a negative that is worthless on account of insufficient exposure.

From these few lines the reader will see that much may be done in this field of photography and the general interest cannot help but increase with the worker's knowledge and experience. The pictures accompanying this article have been selected from a large number not as extreme examples of focal plane work but rather to show the general or all around adaptability of cameras of this type and to show that they can not only do all that any other type of cameras can do but that work can frequently be obtained with them that could not be had in any other way.



MADAM BUTTERFLY.

W. AND G. PARRISH.

DEVELOPING IN THE TROPICS WITHOUT ICE.

By R. W. HARRISON.

THE summer of 1906 found me on the coast of the Gulf of Mexico, and notwithstanding the remoteness of the situation I was frequently called on to make portraits and develop films for summer visitors.

My first call found me without sulphuric acid or chrome alum, therefore an acid fixing bath was out of the question. Ice was twenty-five miles away and had to be handled by five different carriers to reach one's wharf, therefore its price was prohibitory, average temperature after sundown 85 to 90 degrees. Water freshly pumped was 70 degrees. Running water, as from a tap, was not obtainable, and soon after pumping got to air temperature. These were the conditions; not much

worse as to temperature than frequently obtained in northern districts. I could not take advantage of morning coolness as my dark room was not dark.

My method at first was to take advantage of every scrap of coolness to be had, although later experience showed that extreme precautions were not necessary. For instance at first I put the hypo crystals into the dish, and only when I was about to begin development did I pour freshly pumped water in, thus I had a cool solution caused by the dissolving of the crystals. It is a fact not generally known that recently dissolved hypo has a somewhat astringent effect on the film, while the same solution used next day has a positively softening effect on the film.

The problem of holding the film intact is about the same as developing it: there are two opposing principles in the developer; one is an astringent or hardener, viz., pyro, the other is a softener, viz., the carbonate of soda. As the amount of the astringent is comparatively small, usually two to three grains per ounce of solution, and as the softening agent is much greater, four to eight grains per ounce, it stands to reason that to keep the film on the plate the softener must be held down in some way. In places where it is possible this is done by regulating the temperature with ice. But there are many places where ice is not obtainable and the solution of the problem is to be looked for in an accelerator which does not soften the film. These requirements are found in formaldehyde, a very powerful astringent, antiseptic and deodorant, sold in 40 per cent. solution by all druggists. This solution can be substituted entirely for any other accelerator, but I prefer the results obtained by using a little over one-half the carbonate of soda called for by the formula and two drops of formaldehyde to each ounce of developer. In some cases a small amount of bromide may be necessary, say one drop of a ten per cent. solution to each ounce of developer. The formula for developer which I adopted is as follows:

Water	4 ounces
Sulphite of soda, 1 mustard spoonful, about....	20 grains
Carbonate of soda, 1 mustard spoonful, about....	15 "
Formaldehyde, 40% solution.....	6 to 8 drops
Dry pyro, 1 mustard spoonful.....	10 grains

It may seem strange to measure by mustard spoonfuls, but

it is sufficiently exact for practical purposes and infinitely quicker than weighing unless large quantities are used. The common little boxwood mustard spoon with a spherical bowl is the sort I have used. I am aware that large varieties of weights can be packed into the bowl of the spoon, but I know by experience that a very small amount of practice enables one to pack the right amount instantly.

I have used the mustard spoon for measuring pyro many years and found great advantage in using an exact quantity of pyro which has not deteriorated in solution. The easy solution of the dried carbonate and sulphite of soda now on the market influenced me to try the use of all the chemicals in an absolutely fresh solution with resulting negatives which were to my mind very much superior to those made by the stock solution method.

The formaldehyde acts both as a hardener and accelerator; this is hard to believe, but a fact. The carbonate of soda may be omitted and about twice as much formaldehyde and an equal quantity of 10 per cent. bromide used, with good results, but I prefer half carbonate and half formaldehyde, which gave sufficient hardness to the film to stand fixing in plain fresh hypo solution and washing in water at 80 deg. Fahr. These were ordinary Cramer and Seed plates and Eastman films. Two or three times a plate was overlooked and remained in water overnight and in the morning was found all right.

I observe that most of the plate demonstrators now instead of carrying around their carefully packed bottles of carefully prepared solutions, are now "toting" packages of ready measured dry developer.

AMIDOL.

By HENRY ERLE COOPER.



F the many modern developers given to the photographic world by the research of the German chemists, amidol is probably one of the most successful, and also the least used. As a developer for bromide paper and gaslight papers of the Velox type it undoubtedly occupies first place for producing pure grey tones, tending to the blue-grey which is probably the aim of all photographers who value purity of color, and wish to avoid any suspicion of brown or green tints in their results.

One argument in its favor is its extreme simplicity, being only a single solution developer, and containing only three or four constituents its preparation is a very simple operation, and where a large number of prints of large size are turned out and consequently a quantity of developer used, this is worthy of consideration. Undoubtedly the reason why amidol is not more extensively used as a developer for paper prints is its rapid deterioration when mixed with the sulphite, and its loss of power after a few prints have been developed, the developer turning discolored and making purity of prints an impossibility.

The following method will, however, obviate this difficulty and render the keeping quality of the developer all that could be desired. First make up a stock solution of sulphite of soda as follows:

Sulphite of soda.....	10 ounces
Metabisulphite of potassium.....	2 "
Water	80 "

The use of the metabisulphite of potassium is to neutralize the sulphite solution and improve its keeping quality for where, as the simple sulphite solution will steadily weaken, the admixture of the metabisulphite will cause it to keep indefinitely. Another point equally important is that when the developer is in use a much larger number of prints can be developed, thus effecting a considerable saving in developer, besides giving purer results.



WHERE ARE THE SONGS OF SUMMER?

W. H. ZERBE.

For the development of bromide paper the following formula will be found to give excellent results: Stock solution of sulphite of soda, 20 ounces; amidol, 80 grains; bromide of potassium, 30 drops of a ten per cent. solution. Should there be any trace of greenness or brown in the shadows and dark tones, reduce the quantity of bromide of potassium, while if any appearance of greyness and lack of brilliancy is noticed the bromide should be increased.

One other point in regard to this developer that is important is that the amidol should be in good condition when mixed, the powder being a silver grey color, if dark grey through exposure to the air or age deterioration has set in and pure prints cannot be expected to result. All bottles containing amidol, whether in powder or solution, should have the corks dipped in melted paraffine wax to insure their being air tight.

To all who have not tried amidol as a developer for prints the writer has no hesitation in most strongly recommending it as the developer par excellence for bromide paper, giving a blue grey color to the prints which is unattainable with any other developer together with a cleanness in making which is strongly in its favor.



THE FARM ON THE MARSH.

C. M. WHITNEY.



PORTRAIT GROUP.

R. Dührkoop.



HOME PORTRAIT.

F. C. BAKER.



A STUDY IN GREY.

K. THEO. KRANTZ.

TEST PAPERS IN PHOTOGRAPHY.

By DAVID GRAY ARCHIBALD.

THE use of litmus for indicating the acidity or alkalinity of fluids is known to every photographer. But the exact meaning of the chemical action that takes place when test papers or solution turn red or blue in a bath is not very clear. Most of us know that if the test paper turns red the solution is acid and if it turns blue it is alkaline. The preparation of litmus for testing purposes, whether on paper or in tincture does not concern us as practical photographers. Those so inclined can find full particulars of the methods of preparing it in any standard work on chemistry. The usual way of getting it is in strips or books. It is the better for being kept in bottles, closely stoppered and out of the light. Light action fades it and its color should be uniform and neither too light nor too dark. Litmus paper comes in red and blue, and most photographic dealers sell it in ten cent packets.

Naturally the color of litmus is red and it only becomes blue from the action of a free alkali.

In making up toning baths, etc., its use is a guide to the condition of our bath. The gold chloride used in toning comes in an acid condition and we add a solution of an alkali to a mixture of it to bring our bath to a state *slightly* alkaline, and here is where the rub comes in. This litmus paper is not nearly so sensitive a test as is commonly supposed, although if given time it will react if a bath be *slightly* alkaline or acid. If it turns rapidly red or blue, we have no knowledge of certainty *how* acid or alkaline the solution is. By making up our solutions long before we want them it is given time to react. If a solution is too acid or too alkaline we can add an alkali or an acid and bring it around again. One already affected strip in the bath will show the change that takes place.

There is another test paper than litmus although not as much used. This is turmeric paper. It is obtainable commercially and its change of color in the presence of an alkali from a yellow to brown is highly characteristic and perceptible.

Much testing will not be necessary if we proceed in a systematic way, not hap-hazard manner, in making up our baths. Add definite quantities of chemicals in making up baths. Then a test to be sure we are right and we are ready to proceed.



THE FIRST STEP.

MRS. J. E. BENNETT.



GENRE.

J. M. WHITEHEAD



THE REMINGTON PORTFOLIO.

HANA ROBISON.

TANK DEVELOPMENT.

By C. H. CLAUDY.

“**T**HE old order changeth and maketh way for the new.” When the dry plate came, the exponents of the old order howled. Yet to-day the wet plate is nowhere, except in engraving plants and laboratories where all the photography is done within ten feet from the dark room.

When the film arrived people decried it—still do, for that matter,—yet barring its expense, it is pretty generally recognized that film is on a par with plates as far as results are concerned.

It has taken, lo, these many years for the truth about development to get even a foot hold in the minds of photographers, both amateur, and professional alike; yet there is no question as to the facts,—time and temperature and original make up of solution are the deciding factors, after exposure, in the kind of negative—and all the addition and subtraction and change and jugglery in the world won't help a plate which has once started to develop.

The facts have been proved. When a fact is proved to be a fact it ceases to be a matter of controversy—the only room for argument is whether or not it has been proved. To prove an established proof is sometimes troublesome, but not in the case of the tank, since the expenditure of a small sum of money and an honest following of instructions will prove it anew to any one who wishes to make the trial.

As the fact has been proved to me, and as I have proved it several times for myself, I am not going to argue about it with you who read. But I am going to set down a very simple and easy way for you to prove once and for all for yourself whether or not time and temperature development is good or not.

Now all rules for tank development,—meaning rules as to constitution of solution, temperature and time, vary with the particular brand of sensitive material employed. So the instructions for one plate will give very poor results with another. Half the time people try the wrong formula on a plate and then blame the theory instead of their own mistake. So you will please use a roll of Eastman film in making this test and follow exactly the maker's instructions as to the developer.

Take of pure, anhydrous sulphite of soda, 90 grains. Take of pure, anhydrous carbonate of soda, 60 grains. Dissolve these thoroughly in three pints of water and see that the water is at the temperature of 65 deg. Fahr. This means sixty five degrees, and not sixty or seventy. Just previous to development stir in the solution 30 grains of pyro.

Now, you should have two rolls of film, with exposures varying as widely as you please from snap shots to time exposures, but all as nearly as possible the correct exposure for the subjects they have reproduced. One of these rolls of film you are to develop in the solution given above for exactly twenty minutes, in the regular film tank, according to instructions.

The other you are to develop *your* way, whatever that may be—in the roll, in the piece after cutting them apart, juggling, arranging solutions, any way you think you know which will improve the resulting prints. Unless your way is to develop in the strip, and for a sufficient time to give the most over exposed negative its normal contrast, the tank negatives will be better than the ones you make by hand. How can I say that? Because I have tried it and seen it tried time and again. The tank makes the better negatives, the cleaner negatives, the crisper negatives. No, it has nothing to do with films or film tanks. Any plate tank and any plates will do the same, providing you have the right formula for that plate and the right strength of solution at the right temperature, and leave them in the right time. The formula is published for Eastman Film,—I do not know that it is published for any plate. Hence I took the film as an example, not wanting to offer the results of my own experiments as established facts, regarding the plates I use.

Now carry this test further. Make a lot of under exposures on a roll of film—make a duplicate for your own hand work. Expose a roll of film and have them all over exposed. Do the same for your own roll. Develop two in the tank and two by hand, but don't *start* those by hand in a restrained solution, for you must be fair and you will admit that you do not usually know when you start development that a plate or film is over exposed. If you did know, you wouldn't have so exposed it. After the development has started pile in bromide all you please. And again, I am positive that the tank results will give better prints than those you have developed by hand—at the outside, they will give prints fully as good, which shows the method has done all you have done—and with infinitely less trouble. In fact there is no test you can put a tank to—no manner of exposures, and no contrast between exposures, which the tank will not do as well with and nine times out of ten better than you or any one else can do by hand. And the reason is in no magic or no change from old things to new, but simply that the scale of tones is determined by the exposure—the steepness of the scale by the time and temperature of the developer. You can't alter the exposure once it is made—you can't alter the scale once it is made. You can alter the steepness of the

scale (contrast) by the time of development and you can alter it by altering the constituents of the developer *before* the scale starts to develop,—beyond that, development has no control in the making of the negative.

Exception of course, is made of local development and such methods as wilfully fogging, or flattening, for pictorial effect. These are beside the question and have no bearing upon it.

It is because the tank operates upon established lines, and because it is based upon scientific facts, that its worth is indisputable,—the only thing you can dispute is whether or not this has been proved, and the test lies in your own hands.

Go and do likewise, and join the gradually increasing army which believes in making the negative in the camera, and leaving development to the laws of nature which govern it.



R. DÜHRKOOP.



THE JOY OF YOUTH.

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THE SKY LINE DRIVE, NEAR CANON CITY, COLO.

GEO. L. BEAM.



TEDDY.

LOUIS FLECKENSTEIN.



CAUGHT NAPPING.

W. S. DAVIS.

TIME DEVELOPMENT.

By W. S. DAVIS.



time development for plates is coming into more general use, perhaps a few notes upon the subject, drawn from practical experience, may be found of interest.

This method of development would undoubtedly have been generally employed years ago, but like many other good things, numerous theories had to be overcome before photographers could be induced to try it.

The investigations of Messrs. Hurter and Driffield have thrown much light upon the subject of development, among other things, the old idea that "tinkering" with the developer after the image appeared, would compensate for errors in exposure, was shown to be false, as correct values or tone gradation in the negative depended upon correct exposure, and any modification of the developer must be made before development was begun. A good account of the investigations of Hurter and Driffield, and others, will be found in *The Photo-Miniature*, Nos. 56 and 66.

From personal experience I believe that the timing method will give better average results on a variety of subjects than the old way of guessing at the proper time to stop development.

One of the advantages of timing development will be felt in handling very sensitive iso or ortho plates, which are so liable to be fogged by examination before the ruby light, and of course the more sensitive they are to the less actinic colors, such as deep orange and red, the more danger there is of fogging them, but such plates can be manipulated with as much ease as an ordinary slow plate, by timing, as they can be placed in a covered tray and developed in total darkness, and need not be removed until development is complete.

Another advantage of timing, is the uniform results obtained, which it is almost impossible to get by guess work in the dim light (or should I say darkness made visible?) of the ordinary dark room, and this will be found especially true by those who only develop occasionally, as it is so easy to get out of practice when one depends upon a visual examination of the plate during development.

Perhaps the reader will say: I can understand how uniform results can be obtained from correct exposures, but how about under and over exposed plates? Now this is where those who have never tried it are surprised at the results, but as a practical test is the best proof, expose three plates on the same subject, giving the first the correct exposure, the second less, and the third more than the normal exposure, and develop all three for the same time, taking the correctly exposed plate as a guide, and developing it to the desired depth. On examining the other two, the under exposed plate will be found thin but with all the detail the exposure could give, and with a little care in printing, such a negative will yield the best print that an under exposure could give, whereas if development had been pushed beyond the normal time, as is generally done in the hope of getting more detail in the shadows or thin parts of the plate, the result would be a blocking up of both the half tones and high lights, producing a negative which would only give a print made up of blotches of black and white, as is too often seen. The over exposed plates will be found somewhat dense or opaque, but will be found to yield a print of good contrast, only requiring a longer time to print, and if this is considered an inconvenience, it may easily be reduced immediately after fixing, by transferring to a tray of water in which a few grains of potassium ferricyanide have been dis-

solved. Ordinarily when the image appears suddenly on an over exposed plate, development is stopped too soon, resulting in a very thin negative lacking in contrast, while if development had been continued for the normal time, a negative with good contrast might have been obtained.

From the preceding remarks I do not mean to infer that care should not be taken to make a correct exposure. On the contrary it is of course just as true of the time method as any other that the nearer correct the exposure the more perfect the



RESTING.

W. S. DAVIS.

negative, and as an aid to correct exposure, I believe a good exposure meter to be of much value, especially to an occasional worker.

In regard to the developer, I do not wish to convey the idea that it must always be of the same strength, or the time of development the same, as for certain subjects both may be modified with advantage. For example, if a subject has very strong contrast the time of development may be shortened, or where a plate is known to be very much under exposed, more water may be added, and development continued longer,

generally in the same proportion to the dilution of the developer, i. e., if the developer is diluted with an equal amount of water the time of development may be doubled. And I may say here, that it is not necessary to mix a fresh solution for each plate, as the same developer can be used for several plates with uniform results.

The question of what developer to use, is of small importance so long as it is made of the same strength each time, and the solution is of fairly even temperature during development, 65 deg. Fahr. is good, but a variation of a few degrees either way does not appear to affect the result. If one has a favorite developer it is only necessary to make one or two tests to determine the correct time for developing a properly exposed plate, and then stick to it.

For those who wish definite formulæ, I give two which have proven satisfactory for all around use:

EDINOL.

Edinol	8 grains
Sodium sulphite (dry).....	40 "
Sodium carb. (dry).....	40 "
Water	4 ounces

PYRO.

Pyro	8 grains
Sodium sulphite (dry).....	48 "
Sodium carb. (dry).....	30 "
Water	4 ounces

No bromide is required with either. Both formulæ are for four minute development.

In closing I give a few notes regarding the exposure and development of the negatives, from which the accompanying illustrations were made, and while everything I have said applies to ordinary dark room development, I may perhaps be allowed to say that the negatives mentioned were developed in daylight, by the timing method, in my daylight developing machine for plates.

"Resting," exposure $1/5$ second, stop $f/8$, Ideal Ray filter on lens, Stanley plate. Developed four minutes with edinol.

"Caught Napping," taken on a cloudy winter day by light of south window. Exposure four seconds, stop $f/11$, Cramer "Crown" plate. Developed four minutes with pyro.

Both the developers mentioned were mixed by the formulæ previously given.



THE ELEVATED ROAD, N. Y.

JOHN BEEBY.



AN ARCHITECTURAL DETAIL.

ROBERT W. TEBES.

CHURCH INTERIORS.

By ROBERT W. TEBBS.

WHILE for the past two years I have had the pleasure of writing for the ANNUAL on the subject of sporting photography, by the edict issued early this spring by the sporting editors of the various New York papers that "Our Cartoonist will cover the pictorial end of sports this year," I found that I should have to look to other fields for a livelihood. And so with the kind permission of the editor I will tell something of my experience in photographing for builders and architects.

When I mentioned interior work to my friends a lot of them immediately recommended such and such a time exposure meter; books by so and so; but profiting by snap shot experiences I decided to give one month to timing, not by meter, but by actual experience. Over-exposure was my main fault at first. When I thought I had learned the rudiments of the game, I looked around for a job and soon found a church to photograph.

The first picture I took there has been so far the most difficult one I have had. It was the accompanying piece of stucco work. No elevation of the camera could reach it from the ground. I finally borrowed two plasterers' ladders, and by placing a board across the top of them and an old barrel on top of that I managed to get my camera on a level with the stucco work. But there was no room for me on this shaky platform and I was forced to bring into requisition a third ladder. This I placed back of the camera and proceeded to focus. Then I decided to stop my lens down. So down I climbed off the ladder and moved to the front of the camera. Then another move to the back to put in my plate holder. Then I found that if I attempted to remove the cap of the lens from the back I should shake the camera, so another move was necessary. But I got a beautiful negative although I quit work for the day when I had taken it.

In that one church I did work for the architect, builder, stucco man and priest. In all I cleared some \$300, so my first building job proved a success.

Since then I have photographed about thirty churches. Our



A NEW YORK CHURCH INTERIOR.

ROBERT W. TEBBS.

more fortunate friends "do" Europe and come back raving over the churches abroad but many of them never look at home for the beautiful churches around them. The accompanying photographs of the Church of "Our Lady of Good Counsel" on the upper east side, New York, do scant justice to its beauty, and this is only one of our many fine churches.

So far I have not used an ounce of flash powder. Many photographers insist on its use to save the long time exposure often necessary. Almost invariably on going to a church I am asked if I am going to "smoke them out." They don't like it, and from my short experience, I presume to claim that on an average a fifteen-minute exposure with a lens stopped down to f32, produces a finer and *more natural* picture than the finest flash light. Flash light workers are the nature fakirs of photography.

I use an 11 x 14 camera with my old 5 x 8 Zeiss-Tessar usually stopped to f32. I have found nothing approaching for color value and general excellence the Standard Orthonon plate. And for a printing paper if there is anything more beautiful than the Special Studio Artura I have yet to see it.

The only other requisite is patience. Don't be in a hurry. Give a little too much rather than too little time. Don't pick out the centre aisle and think you have the best view. Very often the side aisle showing the main body of the church through the pillars is far prettier.

If you are not a worshipper at the shrine of some particular developer try the following:

Metol	¼ oz.
Hydroquinone	1 oz.
Sulphite Soda (granular)	3 oz.
Carbonate Soda (granular)	5 oz.
Bromide Potassium	¼ oz.
Water	100 oz.

Do not dilute. Use over and over for plate and paper.



IVY GERANIUM.

ARTHUR W. WALBURN.




AT THE TOMB
OF MOHAMMED.

DR. GUSTAV EISER.

THE KALLITYPE PROCESS.

By WALTER W. LAKIN.

HROUGH the medium of this popular annual I would like to call the attention of the serious worker to the merits of the old printing process, viz., Kallitype. Good prints by this process cannot be told from platinum, and now that platinum paper has advanced so in price, it is well to be able to use so good a substitute, one so satisfying as to tones produced, so easy of working, and withal so cheap.

Paper.—Any surface of paper can be prepared to suit varying effects desired, from the highly calendered to the roughest of water color paper, but I would suggest for the first trials Whatman's smooth and medium drawing paper, or a rough surface writing paper.

Sizing.—All papers require to be sized, and for those rich velvety blacks use the following: One hundred grains of arrowroot made to a cream with a little cold water; add ten ounces of hot water, in which has been dissolved twenty grains of gum arabic; then put the mixture in an enameled boiler and bring to the boiling point, stirring all the time. When cold, take off the skin on top. Pin a sheet of paper down to a board, and with a fine sponge spread some of the solution evenly over the surface, wash out the sponge, squeeze dry and go lightly over the paper with it to even up the surface. When dry it is ready for sensitizing.

Sensitising.—Weigh out seventy-five grains of ferric oxalate, and put into a clean glass bottle with one ounce of distilled water; place the bottle in a saucepan with water and bring to a boil. Should the oxalate refuse to dissolve add a few grains of powdered oxalic acid, filter through paper while hot, then add thirty grains silver nitrate. This solution can be made and used in a gaslighted room but it should be kept in the dark.

Coating.—Pin down to the board the sized paper, and taking a wad of cotton wool dip it in the foregoing solution and

mop over the surface of paper. When covered take a clean, dry camel-hair brush and drag it across the paper, then up and down until the surface begins to look dry. Now finish drying as quickly as possible by holding near a fire or other source of heat.

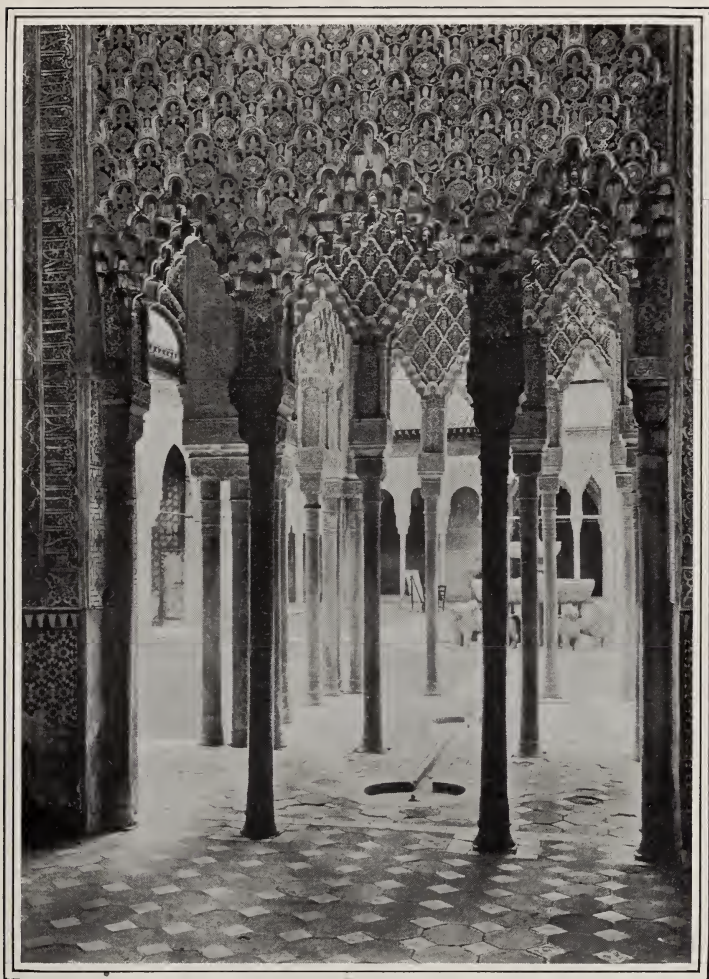
Printing.—The sensitized paper will keep in good condition for several days, but I would suggest using it within two days. Print in daylight till the details are visible in the high lights, and rather weak in the shadows. Immerse in the following developer for black tones: Borax, one ounce; rochelle salt, three-quarter ounce; hot water, ten ounces; pottasium bichromate solution, seven drams. The bichromate solution will keep a long time in the dark, so make up a quantity, say ninety grains in twenty ounces of water. Leave the prints in developer (which must be used cold) from twenty to thirty minutes, turning them over several times. Developer for sepia tones: Rochelle salt, half ounce; water, ten ounces; bichromate solution, four drams.

Fixing.—Hypo, one ounce; strong ammonia water, two drams; water, twenty ounces. Take the print from the developer and put in the fixing bath for fifteen minutes, then into a second bath for the same length of time; finally wash for thirty minutes in running water, or eight or ten changes, and hang up to dry.



THE COUNTRY COUSIN.

KATE MATTHEWS.



COURT OF THE LIONS,
ALHAMBRA.

CHAS. ATKIN SWAN.



REFLECTIONS.

R. DÜRRKOPF.



THE BROOK.

L. M. Kaiser.



FIVE O'CLOCK TEA.

O. C. CONKLING.

COLORING POST CARDS.

By HENRY C. DELERY.



THE Souvenir Post Card has now attained an important position among the numerous quests for collectors, and though at one time thought to be a mere fad, it has outgrown this embryonic stage and is now one of the most enjoyable, instructive and most universal innovations of the présent century.

For the camerist, it has particular charms and the ease and rapidity by which they can be produced, appeals to all; as with the present day appliances in photography, one can take a view, develop and print the same and mail it to one's friends on the very day that it was photographed, affording an inexpensive but pretty souvenir which expresses more in its simple mirage of nature's beauties than ever pen can describe; and the thought that the little missive is the work of the sender, renders it more precious and more likely to be appreciated by the recipient.

The market is now flooded with innumerable views, some

exquisitely rendered, yet others wholly lacking in harmony of colors and artistic expression, at best but a masquerade of nature. It may have often happened to the camerist to desire something better, a truer representation of light and color as they appear in the camera, yet with the limitations of photography, one is practically impotent and must resort to artificial means to enliven the cold lifeless reproduction of the camera. Simple directions to attain this end is the apology for this little sketch.

First, we must consider the nature of the card upon which the subject is printed, whether a smooth bibulous surface like the platinum or a gelatinous, as with the development or glossy collodion finish papers.

The most artistic and perhaps the simplest process is the pure platinum paper. The surface of this paper being porous, it is advisable to first moisten the whole print in order to facilitate the flow of the colors and prevent stains. Some advise the use of Acme solution.

A large brush is used for this purpose and with a few strokes across the card, beginning at the top and moving downwards, the whole surface is gone over; the surplus water is then removed with blotting paper until only a sufficient amount of moisture remains so that the colors will not run.

The matt surface papers, such as Aristo-Platino, Velox, etc., require a coating of Acme Solution and for colodion and glossy papers, Acme Medium, a different solution than the above, should be employed.

The surface of the card being ready, we proceed to apply the colors. As to the proper colors to use, this must to a great extent be left to the taste of the colorist, who should study nature in all her different moods and strive to imitate her. And here must it be mentioned that it is far better to color the view from the spot from which it was photographed and note all the varying lights and shades, a most enticing study, when we perceive color effects which would otherwise be impossible.

The first colors to be applied are the broad washes, such as the sky and foreground, in a landscape. In this instance it is preferable not to put the colors on too thick, as it is better to apply a second coat if the first is not dark enough; in fact the

placing of one color next to another has peculiar effects, and a shade which at first appeared too dark, will change its tone considerably when other tints are added.

I find it advisable to use the brightest colors permissible with good taste, as the body of the photograph being naturally dark requires a greater brightness to give snap and vigor, than the ordinary water color drawing with its plain white paper for its background.

For the sky, if pure white in the print and a plain effect is desired, Cobalt Blue answers best. A large brush is filled with the solution and beginning at the top of the print, the color is run across it with horizontal strokes, gradually diminishing the intensity as the horizon is reached where it should be almost white; here a slight tint of pink and yellow is added while the surface is still wet and the colors gradually and softly blended one into the other.

The foreground next receives attention, in like manner and when completed, details can be worked out. One great rule should guide us in this operation, the foreground must be strong and bold and the distance subdued, gradually blending to a grayish purple to gain atmosphere and depth. Nature presents a kaleidoscopic panorama with ever changing gradations of color effects and it would be impossible to set rules as to what color to employ to gain certain results. This the student had better learn with a little experience. Generalizing, the following colors produce agreeable effects: Hookers Green No. 2 and Sap Green for foliage of trees and meadows, darkened with Prussian Blue or lightened with Gamboge as the occasion may require; for sunlight effects on those portions which receive the direct rays of the sun, Naples Yellow answers best. Trunks of trees may be gone over with Van Dyke Brown, brightened or darkened with Sienna or Green.

As to the number of colors, very few are required, for with five or six primary colors, combinations can be made to obtain any desired tints. The following will suffice for an initial outfit: Cobalt Blue, Prussian Blue, Naples Yellow, Gamboge, Natural tint, Vermillion, VanDyke Brown, Burnt Sienna, Rose Madder, and Chinese White. Moist colors of some standard make, such as Winsor and Newton, are recommended as being convenient, especially when travelling. A small tinned japan-

ned box as usually supplied, with a double cover, one having depressed panels to hold water for preparing the washes is very desirable. These are readily obtained from the art stores. As to brushes, only two or three are necessary, one should be quite large for broad washes, etc., another of medium size for general use; and a small fine pointed one for touching up small work and details. It is a mistake to use too small a brush, as the best results are obtained with a rather good size brush, say a No. 5.

When all is in readiness, a little of the color is taken from the pans and placed in the depressed panels of the color box; water is added until the desired consistency is obtained and the color applied in the manner described above.



DAISIES.

JAMES THOMSON.



ANNA B——

ROBT. E. WEEKS.



"GOOD MORNING."

LOUIS FLECKENSTEIN.



ON THE ZUYDER ZEE.

HY. ERLE COOPER.

RECORDING EXPOSURES.

By H. M. GASSMAN.

BEFORE starting on my summer vacation I prepared to take about four dozen pictures on the trip. As there were no local facilities for developing the plates I brought them home.

The problem was to identify each plate from the time it was put in the holder until it was used for printing. My object was to find out the difference between plates, the effect of exposure and its relation to development and various developers. Although these points have been investigated often with a few plates it requires some system rather than memory, for so many plates. My outfit included three lenses, a ray filter, four kinds and two sizes of plates.

In the first place I secured six holders, numbered each side and put in the twelve plates at home. I took with me an empty box for each size of plate, a focussing cloth to keep stray light out of the room when changing plates at night, a folding candle ruby lamp, a camel's hair brush and a small exposure book.

The book was ruled with vertical columns having these headings:

Plate holder number, name of plate, size of plate, subject, character of light, time of day, lens used, aperture, exposure, date, serial number of exposure.

By referring to this book I could select the particular plate desired, and be sure of getting it. The data on exposure was filled in immediately after making the exposure. Under "subject" it is important to give enough detailed description to differentiate the plate from any other even though taken from the same point. If the view suggest an appropriate title it should be noted also.

When I changed the plates at night the serial number of exposure was put on one corner of the film by a lead pencil or pin. The plates were packed in the empty boxes in the same manner as they were originally. Each box was labeled giving contents.

This system worked very satisfactorily but may be modified in various ways to suit conditions which are very different.



IN ROTTERDAM.

HY. ERLE COOPER.



R. Dührkoop.

PHOTOGRAPHING TARPON.

By JULIAN A. DIMOCK.



IRST corner the market on patience, then develop an abhorrence for the conventional, and photographing the leaping tarpon will become the veriest amusement to you.

Through years of assiduous cultivation my supply of the first quality is equal to all ordinary Northern demands, but for fish work in Florida it falls so far short that it has been only the inexhaustible fund which my companion had on tap that enabled me to persist long enough to catch the fish. For catching the fish is the only real difficulty that one encounters.

Avoid the conventional methods—for you are not fishing for the sake of catching the tarpon, but in the hope of photographing his leap. Therefore banish the usual rod and reel. Use a hand line and play the fish to encourage his aerial performance. Finally reward him for his exhibition—unhook him and let him go his way.

In photographing a leaping fish the chief trouble is to know where, or rather at what distance from the camera, he is going to jump. It is, in part, to overcome this trouble that I mark my line with ribbons, so that I can keep tab on how much line is out. At twenty-five feet from the hook is a red ribbon, at fifty feet is a blue one, at a hundred feet a white one. Thus I am able to approximate the distance of the fish. If, at the moment of his jump, the line is taut the mark accurately gauges his distance, and *if* he jumps straight up you have only to see that your camera is focussed for a corresponding distance to have a sharp image on your plate. A scale on your camera is a necessity while a digital scale, or one which may be focussed by sense of touch alone, is of much aid, for then your eyes are free to watch the marks on the line; to follow the direction of the fish, and in general to see what is happening or—more important—to see what is about to happen. For if the fish is going to make a record leap you do not want

to waste your plate on an exposure just as he comes out of the water but wait until he is away up in the air. If he is only coming half out of the water it is unwise to wait too long as he will be back in the water before you shoot. Free from entangling hoods you can sometimes forecast the future, but with your eyes hidden beneath it you are lost.

The fly in the ointment of accurate focussing is that the fish cannot be held at any particular mark, and that he won't jump straight up. Often you will hear a buzz as the line slips through the fisherman's hands (he will wear gloves if he has had experience) and you have to guess at how much has slipped away since last you saw a mark. Then the fish may circle so fast that the line seems taut in one direction while the fish will jump in another and at a distance of only a few feet. Again if the line is straight and taut he may jump towards you, away from you, or to either side, and as the length of his jump may be more than a score of feet this upsets your most careful calculations as to focus.

The most experienced of sporting photographers tells me that he is able to focus even a bass on the ground glass while he is in the air, but for me to look at the glass in photographing such quick action subjects is to court disaster.

Sights, or a camera in the form of a gun, are alike disastrous for this work, for they use up too much time when there is none to spare. A very little practice with merely holding your camera on your knees, or against your chest, will enable you to center any object on your plate and in most cases to keep even the horizon line fairly level. If you must stop each time to lift a heavy instrument to your shoulder and line up the sights your quarry will be in his native element before you can make an exposure. When your little skiff is dancing around among the waves, so now the stern points up in the clouds, now down towards the depths, it requires some rapid change work to keep the camera level, but this is easier than it might appear, for automatically the arms swing to keep the heavy box in position.

To get the jump at its best is a matter of luck, or judgment—according as to whether it is you or some other fellow that gets it. Occasionally I admire my own "judgment" in this matter and am often surprised at the "luck" which falls to

the lot of some other camera. There is one camera that caught a bass in the air, the fisherman in the canoe, and a background of clouds all on a big scale on one plate. That's luck, for no amount of judgment would give a fellow all of that at once.

In practice I sit, facing aft, as far toward the stern as I can get, the fisherman sits on the thwart just behind me, while the oarsman rows from the forward seat. It rests with your two companions to keep the fish at the proper distance for you. The oarsman by backing or pulling forward can do much, but mainly it rests with the man at the line to keep the tarpon where he is wanted, and this by playing him with a light strain between times while you are changing plateholders, or when the fish comes in on the line, or by putting on a heavier strain when he seeks to run away. With the best of handling it is a matter of luck whether his jumps come all at once, too fast for you to change plates, or with sufficient intervals between for you to be ready for each one. Sometimes a big strong fish will simply run away with the line, going so far that it is a mere waste of plates to expose any on him. Again he will stay at the end of a fifty foot line and jump at intervals of several minutes. It happens that out of eight or nine jumps I will get every one, and again I will make only one exposure out of the same number of opportunities. In general I count on getting a little less than fifty per cent. of the jumps and having about the same proportion of exposures result in usable negatives.

The hard part is to get the fish on the hook. One forenoon I caught so many that the mental strain was such that I simply had to stop as I could not distinguish a jump from a tree on shore. Sadly we paid for that day of good luck, for we didn't catch another tarpon the whole season! If I know the man, I am ready to believe any tale of tarpon fishing for I have seen sights of which I dare not speak, but when I do not know the story teller I reserve the right to believe or disbelieve his tale.

In the matter of exposure and of stopping down your lens, follow your bent in that direction. Mine vary with my passing moods, and range all the way from one two-hundredth to one eight-hundredth of a second, and the opening from wide open to F/16. While I have even made exposures with a ray filter.

Light, surroundings, and condition of the water all make this a variable quantity. With dirty clouds to reflect the light on smooth water, the result is sometimes so flat that only the use of a ray filter or working against the sun will give you any contrast at all. My own partiality is to give a long time with a lens fairly wide open and so to get a fully timed negative. With the wonderful light of the tropics, though, this is surprisingly short.

After all the length of exposure and the stop used are of small account. Get the fish in front of your camera, have the focus approximately correct and you can hardly spoil the result.



ANTICIPATION.

THEO. F. EITEL.



A CALIFORNIA MISSION (PINHOLE).

W. E. PASSONVILLE.



THE HARBOR, ALGIERS.

DR. GUSTAV EISER.

VACATION PHOTOGRAPHY.

By J. C. HEGARTY.



HERE are many people who are interested in photography but who on account of the exacting duties of their business or profession have but little opportunity to practice this fascinating pastime.

This numerous class must be content to practice photography during their vacation. And with what pleasure we look forward to this annual outing. There is a genuine delight in the thought that we are soon to enjoy the pleasures of the mountains or the seashore and leave behind us the monotonous daily routine of home or office, amid new scenes, interesting places and strange people, a new interest in life is created and we realize the joy of living.

Photography will add greatly to the enjoyment of a vacation. The enthusiastic amateur will explore the country with his camera and seek out the beauty spots that are never found by the casual observer, and after his return home the photographs will remind him of the pleasures he has enjoyed and he can live over again the happy days at the seashore, in the mountains or abroad in foreign lands.

The photographs made during vacations often have a value far above commercial views on account of associations or they may be events or incidents that may never occur again; therefore we are always desirous that our work be first class, but unfortunately our vacation photographs are often unsatisfactory.

There are many reasons for this, the amateur accustomed to work around home does not recognize the changed conditions he meets with in the mountains or at the seashore and perhaps errs in exposure, or he may be using plates that he has not become familiar with before starting in on his vacation work; then many failures could be traced to lack of care in the selection of the equipment. This is something that should receive close attention.

In the following hints as to equipment the writer does not intend to convey the impression that the amateur must be equipped with the best lens and finest camera, but the suggestions are made to aid him in selecting a new outfit or adding to the one already owned.

The most important part of the outfit will be the camera. The size will depend on the individual's taste. If he likes a large picture he will use a $6\frac{1}{2} \times 8\frac{1}{2}$ or 8×10 camera, but if he prefers a smaller picture he will select a 4×5 or 5×7 size. There is no denying the fact that the large picture is the most satisfactory, but a large camera means increased expense and on account of the weight is not always desirable, particularly in the mountains where the instrument would have to be carried some distance. The small or medium size offers some advantages, as the plates are not so expensive, more exposures will be made and the weight will not be of so much importance; then if the negatives have been carefully focussed and developed fine enlargements can be made from the 4×5 or 5×7 size.

The camera should be equipped with rising and falling front, double swing back and other adjustments and should have sufficient bellows extension so that the single combination of a rectilinear lens could be used. The most important part of the camera is the lens and as the quality of the negative depends on the lens it should be a good one. If on a tour of some length, a small camera fitted with an anastigmat lens working with a large aperture would be the ideal instrument; by using an anastigmat lens rapid exposures could be made on dull days when snap shots would be impossible with a rectilinear lens. But for ordinary work, groups, landscapes where time exposures could be given or rapid work in good light, the less expensive rectilinear should be used. It should be of the convertible type so that three different lengths of focus are available.

Pictorial workers sometimes use a single achromatic lens and if a good lens of that class is selected fine results can be had in landscape work.

The style of shutter will be governed by the kind of work that is to be done; where it will be open landscape views with an occasional snap shot, a simple inexpensive shutter will be



R. Dührkoop.



WINTER LANDSCAPE.

MARGARET L. BODINE AND NINA F. LEWIS.

used, but if the amateur desires to make photographs of rapidly moving objects he will require a more rapid shutter preferably of the focal type.

The tripod should be strong and rigid so the camera will not be shaken by the wind, the combined folding and sliding style will be found more compact when folded for carrying and when in use can be readily adjusted to the uneven ground often met with in field work.

For work with orthochromatic plates where the effort is made to get color values or to get clouds with the landscape a ray filter or color screen should be included. It should be light in color, for if too dark the effect will be exaggerated.

A focussing cloth of ample size and preferably of rubber, with a good supply of plate holders will complete the outfit. Before beginning work the camera, shutter and plate holders should be carefully examined to see that they do not leak light and are in first class condition.

The photographer should use the plates he is familiar with and thus avoid the mistakes of over or under exposure. For ordinary work a rapid plate will meet the requirements and will probably be used in almost every instance. Some orthochromatic plates should be included for use where there is a variety of different colored foliage in the view or for mountain scenes, while they will be found indispensable for cloud studies. For scenes in the deep woods and landscape views where large trees stand out against the sky or other subjects that might suffer from halation, a double coated plate should be used. These plates permit such latitude in exposure that slight errors in timing do not affect the result, therefore where you are very desirous of obtaining a good negative and would not have an opportunity to make a second exposure a double coated non-halation plate should be used. Some workers advise that all plates be backed. In many cases this is a distinct advantage, especially with plates that show halation readily.

If a small camera is used it can be arranged to take both plates and film. This would be an advantage, for plates are heavy and if a great many are used they become burdensome on the journey. Films weigh but little and many rolls or packs can be carried in a small space.

If the amateur proposes spending some time in a locality

he should go over the ground carefully without his camera choosing the places that he thinks will make pictures, and studying the scenes to determine the point where the camera should be placed to get the most pleasing view. He will also determine the time when the scene is lighted properly; the beauty of the scene depends largely on the lighting, so close attention should be given to this part of the work. It will be found that the early morning and late afternoon hours when the shadows are long will give the most pleasing results. If the amateur's time is limited and he is enthusiastic he will probably begin work at once, but he should not be too hasty in making exposures for unless the scene is properly lighted he will find the results inferior. Many scenes are beautiful on account of the color, but when shown in black and white are a disappointment. We should therefore pay close attention to the lighting as well as the composition of the scene, remembering that the lens takes what is before it and does not possess the faculty of leaving out the objectionable parts.

The earnest worker will not confine his photographic work to bright, sunshiny, days but will get some of his finest results on cloudy days or when there is a haze in the distance yielding that much desired effect known as atmosphere. All days are good days for camera work except when it is raining or when there is a high wind blowing. For work in the deep woods a dull day should be chosen, for if the exposure is made in bright sunshine the photograph will have chalky high lights and very deep shadows; give a liberal exposure as the light is very weak in the woods and when developing use the solution considerably diluted. Views along streams are always pleasing, but they require some care in exposure; where the shadows from the trees are heavy there will be a tendency toward contrast as the reflections from the water are very strong; give a liberal exposure to get detail in the shadows and take care of the high lights in development.

For work at the seashore, snap-shots of waves, yachts or groups of bathers, a rapid shutter will be required and a plate that is inclined to give soft negatives without violent contrasts.

The light being strong the exposures should be very short and as the subjects are constantly moving the work with the camera must be done quickly; a part of the exposures will be

without merit perhaps, but a few successful ones will compensate for the efforts.

The plates or films should be carefully packed soon after exposure, the plates in their original boxes, with coated sides together. The boxes should then be wrapped in heavy paper and securely tied with a strong cord. No developing should be attempted while on tour unless there is doubt as to exposure when an occasional plate may be developed as a test. This would necessitate the carrying of two trays and a limited supply of developer put up in powders ready for mixing. Dark room facilities are not always to be had and the amateur will do much better work in his own dark room where he can work leisurely in familiar surroundings.

By the aid of the camera a vacation may be made most enjoyable and when it draws to a close you return home renewed in health, rich in new experiences and with many gems of nature gathered with the aid of your camera.



A ROCKY
MOUNTAIN LAKE.

J. C. HEGARTY.



THE FORTUNE TELLER.

R. E. WEEKS.



TEDDY.

ELISABETH HOLDEN.

PHOTOGRAPHING FOOTPRINTS.

By JOHN BOYD.



THE fact that the ANNUAL comes into the hands of its readers each year when the days are growing shorter, and odd snowflakes are fluttering in the north prompts me to respond to the editor's invitation by offering him a winter subject.

That it is not a common one is best evidenced by its rareness among the published prints, but that there is plenty material all around us can be attested by any who visit the fields or woods after a fall of snow.

The footprints of some unknown bird or animal on the white page of nature stirs the curiosity of many, and its picturing by the camerist will often be the milestone that will mark a pleasant trip.

We would like right here to touch on the natural history of various footprints, for there is a story in every path, but the nature of our publication bids us confine ourselves to their photographic possibilities.

A footprint to appeal to the photographer must present some pictorial features amidst its surroundings. What these are we must leave to the individual worker, for here we can only point out in short paragraphs some of the things that will assist the novice on his way.

The best negatives are made when the sun is shining. The reason is that we have got to get contrast and definition.

Nine-tenths of these negatives must be taken almost dead against the light, or at all events with the sun at right angles to the camera.

Vertical views give the best results, as they accentuate the foreground, and carry the eye off gradually into infinity.

The tripod should be set low enough to portray the "pads" in the tracks. When these are well outlined the maker's name may be more easily read in the fleecy matrix.

Stop the lens down to F 128 or even F 256. You will need to do so to obtain the depth of focus and definition desirable.

Use the swing back if you have one, and give it all the tilt it will take. This assists in bringing the various distances into a common plane.

Use backed plates for all winter work, and especially in this particular class.



COTTONTAIL RABBIT TRACKS.

JOHN BOYD.

Develop for strong results, and if you use the gaslight papers for printing, make them assist you in increasing or diminishing the contrast.

Study the snow falls, and learn when the atmospheric conditions are best for getting these records of a night's wanderings.

The ideal time is when a snow fall of an inch or less follows after a crust has formed on top of a previous storm.

If the second storm is slightly wet, or if it thaws enough to just "pack," the conditions will be still improved.

Never walk near a trail that you are going to picture, lest it detract from the general effect.

Strive to identify the tracks you find, for half the pleasure is lost if you "collect" an unknown footprint.

Don't imagine that you have got to go far and find some of the rarer wild animals to serve as a subject for a successful picture. The prowling cat, or a wandering dog will give you a good beginning, besides allowing you to work near home.

With these few hints I leave the subject to my readers, assuring them that if they will but turn their eyes from the portrayal of human tracks or figures, and seek the wild places where the more diversified animal footprints exist in all their naturalness, they will find grander possibilities for their cameras, and more lasting pleasures for themselves.



ON THE LAKE.

COPYRIGHT, 1905, BY L. V. KUPPER.



PORTRAIT.

K. DÜHRKOP.



SUNLIGHT AND SHADOW.

JOHN DOVE.

MOUNTING PRINTS IN ALBUMS.

By C. M. WHITNEY.

“**H**OW do you get the leaves to lie so flat?” queried an acquaintance who was looking over with much interest an album in which I had just finished mounting some prints.

A little further talk brought out such a tale of woe from my friend, who is just beginning to tread the path of the camera enthusiast, that I believe I am justified in repeating here, for the benefit of some of the “greenhorns” who each year peruse the *ANNUAL*, some of the points on mounting that I gave my friend.

There is probably no one operation in the production of a finished picture that causes the beginner more trouble than this same mounting, though why it is I know not, as most instruction books take up the matter fully, so that it would seem

that there should be no difficulty in carrying out this, the final step among the various ones that go to make up the sum total of photographic manipulation.

I shall confine my remarks more particularly to the mounting of prints in albums, as this procedure seems to afford no end of trouble to the various amateurs of my acquaintance.

My friend, in common with most others who are new at the work, had purchased an album with flexible leaves, had taken his print, smeared a liberal amount of thin, watery paste on the back, and tried to coax it to lie flat on the album leaf. Needless to say, it wouldn't "stay put." It rolled up as soon as the paste touched it, its corners refused to stay down when it was finally gotten into position on the page, and when at last it was driven by sheer force into sticking, it retaliated by pulling the album leaf into all sorts of shapes, the more as several of its companions were mounted on the same leaf.

Properly managed, mounting is a pleasure. I use a good thick paste, made especially for photographic work. This takes hold and dries quickly, as it carries very little water to dampen the print, or with the flat end of a toothpick, a knife blade, or any similar tool apply a touch of paste to each corner of the print, covering a space of perhaps one-quarter of an inch square. By taking the print in both hands and bending it up a trifle it can be lowered into position without the corners touching the mount. Shift the print about until properly located, then withdraw one hand and press down the two corners thus released. Remove the other hand and press down the remaining corners. A clean blotter or bit of paper may be laid over the print and the corners smoothed firmly into contact with the mount.

For prints 5 x 7 inches or larger I put a touch of paste midway of each edge in addition to that on the corners. I find a small palette knife, such as is used by the painter in oils, very convenient for applying the paste, though any flat ended tool will serve.

An alternative method, which I sometimes use, especially when mounting prints on individual mounts, is to run a line of paste about one-eighth of an inch wide around the entire edge of the print. This is rather harder to manage than the first method, as the print, unless handled very quickly, is apt to

expand where the paste is applied, thus making it difficult to secure good adhesion between it and the mount.

The foregoing directions apply to any paper which has a "coated" surface, such as bromide, printing out and developing paper.

These papers all have a tendency to curl up, and must be held down at all four corners. For platinum or blue print paper, which has no gelatine coating, this secure fastening is not necessary, as the prints have no tendency to cockle. I think it preferable, however, when mounting in an album, to fasten all four corners, no matter what the print may be, as it prevents the prints from being torn or creased when the album is in use.

In attaching a platinum print to a separate mount, however, it is best to apply the paste along the top edge only, covering a strip about one-eighth of an inch wide.

Prints may be attached to both sides of an album leaf in this way without causing the least tendency to warp or curl, and they may be readily detached if desired, by the careful use of a knife point, without injury to print or mount.



EVENING: PORT PHILIP,
VICTORIA, AUSTRALIA.

ERNEST A. BRAY.



AN ANXIOUS MOMENT.

M. TOCH.

A UNIVERSAL DEVELOPER.

By MAXIMILIAN TOCH, F.C.S.



IMPLICITY is one of the most desirable objects in science as well as in art. Some years ago there was a fairly good plate on the market to which a formula for developing was attached that was enough to scare even a practical apothecary. There were nine different items in this developer, and as the manufacturers were not responsible for results unless their formula was particularly carried out, the plate eventually disappeared from the market and the firm went into bankruptcy. The first simple formula was published by the old Nepera Chemical Company, when Velox was originally exploited. This formula invented by Dr. Leo Baekeland, the inventor of Velox, is used to this day, and is probably as good an all around formula as there ever was. However, it has the one drawback in not being as simple as it should be, unless the proper weights and measures are used, and in any institution, gallery or laboratory where much photographing is done, the writer has devised a simpler formula which appears to be as good for gas light papers as it is for plates, with the one possible exception that sometimes it has to be diluted a little more than at other times. Weighing is never necessary because the raw materials all come in weighed packages. Distilled water is not necessary under any circumstance, because both Metol and Hydrochinon are antiseptics of the highest order, so that even water containing more than a trace of organic matter can be safely used without detriment. The formula is very simple and is as follows:

Carbonate of soda, crystals.....	1 lb.
Sulphide of soda, crystals.....	1 lb.
Metol	1 oz.
Hydrochinon	1 oz.
Water	1 gal.

This is shaken up and allowed to stand, and when dissolved will keep indefinitely if the cork is tight and if the bottle is full. To have 16 ounce bottles is a very handy thing, and I have

known this developer to keep perfectly fresh for over a year and a half in a glass stoppered 16 ounce bottle. It is always a good thing to grease the stopper with a little vaseline to prevent the alkali from dissolving the glass and cementing the stopper to the neck of the bottle.

For developing plates, this developer can be used full strength and one dozen $6\frac{1}{2} \times 8\frac{1}{2}$ plates can be developed in 10 minutes with ease.. If the subject comes up too black or white, it is always an excellent idea to have a tray of water alongside of the tray of developer, and when the plate is half developed and shows intensity and hardness, slip it into the tray of water and leave it in there five minutes. It will develop itself very slowly and evenly, and the hardness will entirely disappear.

In black and white objects like the illustration a white dress with black dots and hardly any shadows, the additional water development is of great benefit and advantage. The plates and the gas light prints from which these illustrations were made were both developed with the formula just noted, and the only care and admonition necessary to observe is that with some of the gaslight papers, it is necessary to add more water to this formula.



WINTER.

T. L. ROSENBERGER.



SUMMER HAZE.

Thomas A. Morgan.

PRESS PHOTOGRAPHY.

By CATHARINE WEED WARD.



HAVING read a paper on this subject some months ago before the Society of Women Journalists of London it occurred to me as a good subject for the *AMERICAN ANNUAL*. There is much to be said, but I shall make my article brief and to the point. For some years past the trend of press and book illustration has been towards the use of the camera, and this is rather increasing than diminishing. There has been much complaint from certain art critics and others affected pecuniarily by the use of the camera to the effect that true art is being injured by "machine-made" pictures, that pencil and brush are being displaced by screws and buttons, and that Art (with a capital A) should veil her face before what is to her "the wreck of matter and the crash of worlds." Much of this outcry comes from ignorance, sometimes jealousy, but occasionally is justified by results which never should have seen publicity. One cause for the last named is the multiplicity of cheap cameras which certainly require little brain effort, and the results often are much the same as if a dabbler in painting used impure colors and bad brushes. Having worked in painters' studios before taking up photography my reverence for Art is deep and sincere, and I firmly believe her garment is large enough to include Photography when the latter is used as it should be to do work worthy of preservation. It is not to be wondered at that the general public understand so little what photography really is when so many camera-users know little, (and often care less) of their instruments, save the makers' brief directions. Good work can only be done when one understands the tools to be used, their possibilities and limits,—while poor work had better not be done at all.

In taking up press photography many experts urge specialization, as in the world of to-day to attract notice our work must

NOTE: The illustrations accompanying this paper are from the illustrated edition of "Lorna Doone" on which Mr. and Mrs. Ward are at present engaged.—*Editor*.

rise high enough above the general level to be easily seen. The demand for certain subjects is growing, and can easily



CATHARINE WEED WARD.

Castle Rock, Lynton, Devon.

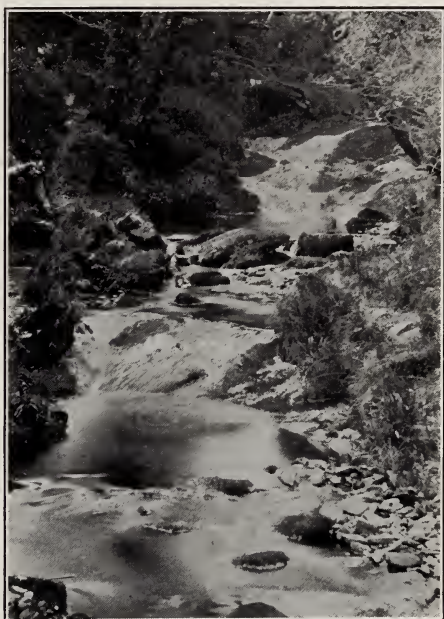
be made to increase, such as topography, science, records of passing events, etc. With book illustration there is opportunity for careful thought and study, but with events which may be forgotten in a few hours the work must be done quickly. This should presuppose practical experience, and training of eye and brain to see and think rapidly. The composition of the view and the necessary technical details must be decided upon in a fraction of a second sometimes, a matter much facilitated by thorough familiarity

with one's lens, plate, stop and camera belongings. As a rule rapid work is best done with a hand camera, as being easy to carry and attracting less notice than a tripod. Where figures are not desired in the view it is well, very often, to use the smallest stop and increase exposure which allows a street to be photographed with no impression on the plate of any moving objects. It is well at times to do the work on Sundays when there is little traffic, the objection being that gates, doors and archways are closed and blinds drawn. In the case of processions or similar events, rapid plates are required and a quick working, simple apparatus, well tested beforehand, and the preliminary as well as final exposures developed by the worker, as in no other way can exposures, often impossible to repeat, be properly estimated.

In exposing for scientific photography, the work is in some

respects simple, rapid plates are not generally needed; it is work often possible to do indoors, but the question of lighting and exposure must be very carefully considered, that suitable for a portrait being usually advisable. Absolute accuracy is always obligatory in scientific results, and negatives with minute detail must be obtained.

Topography includes landscapes and buildings, city and country, exteriors and interiors, when the camera must be used under widely varying conditions. With the first-named the point most often slighted is composition, and even good workers forget or overlook such a matter as whether



CATHARINE WEED WARD.

The Waterslide, Doone Valley, Devon.

the subject should be viewed on the level of the eyes or would appear better if taken from above or below that position. New demands are constantly being made on photography, and the best landscape work can only be done with orthochromatic plates and, when possible, a tripod camera. Let me suggest including a telephoto lens in one's outfit, it is invaluable in mountain views and many otherwise inaccessible subjects.

A very common, but wholly inexcusable fault, especially with views of interiors,—is the use of a very short focus lens. With landscapes this is not so noticeable, but scarcely a magazine article is published which has views of interiors but violates the simplest rules of composition. The foreground is very often too wide compared with the back, and the room, if a home interior, resembles a furniture repository, one piece conflicting with another or placed too near the lens and seen out of

all proportion with the rest. The average purchaser wishes as much as possible for his money, and demands all that can be squeezed on the plate, which is not only inartistic but absolutely incorrect. It is somewhat on the principle of the wicked boy who put a great number of eggs under a setting hen to see, as he said, "the old thing spread herself." When making press illustrations there is not always time for the exposure required with color screens and orthochromatic plates, but their use always means better results. Even when using back-



Oare Church, Devon.

CATHARINE WEED WARD.

ed plates it is sometimes difficult to avoid halation, though a recent French writer, M. Balagny, in advocating an acid instead of alkaline developer, claims that the former obviates that difficulty.

When it comes to printing papers the best for press purposes, or at least most editors and block-makers think so, is either albumen or glossy P.O.P., the disadvantage being that in dull weather printing must often be prolonged for hours, and in working for editors prints must be ready on time. It is necessary in such cases to use bromide or similar paper and, if wanted at once, the negative need only be partly washed, and the paper, being wetted, is pressed into contact, the exposure

made, print developed and dried in minutes instead of hours. Glossy gaslight papers are often more convenient than bromide as they do not make a dark room necessary as with the latter.

The most important question is, however, what subjects editors will prefer. Before submitting work the illustrations in the current magazines and journals should be studied and the preference of each editor noted. Suitability is the great thing, as what might be instantly accepted by one would just as instantly be refused by another, not perhaps because of



Tarr Steps, Exmoor, Devon.

CATHARINE WEED WARD.

the work being poor, only unsuitable for that one editor's purpose. Anniversaries and similar events being known long in advance, prints for them can and should be submitted months ahead to secure attention, and if accompanied by text are more likely to do so. Offered at the right time an only tolerably good view stands more of a chance than a better one arriving nearer publication time. Where buildings of historic or other interest are to be pulled down, views of them, if really good, are usually acceptable, although editors are more likely to favor a well known worker than a stranger. Of late years it is quite common for editors to have a photographer on their staff. A careless piece of work will be valueless, however, as compared with one showing artistic selection and technique, no matter

what the subject may be. Editors in these days have no time to waste over useless stuff, and woman's work should not receive special consideration. The work, not the worker is the important thing. Study the public demand and not your own preferences is a good general rule, though on one point, as a woman, I feel strongly. A woman never should, where it is a question of public decency and purity, forget her womanhood or do any photographic work which will lower that in the eyes of the world no matter how great the pecuniary reward. This holds good whether she photographs or is photographed. In addition to suitability of subject and treatment, size of print is often important, large ones being preferred to small.

Coming to the matter of fees, we must realize that not only do press photographers deserve repayment in some measure for actual expenses, but for their skill, the "know how," and doing work gratis makes it all the harder for those who greatly need payment to receive it. Of course if work is offered for nothing, editors will take it in preference to giving remuneration. Members of the English Photographers Copyright Union agree not to accept less than a minimum fee of a half guinea (\$2.50) for reproduction rights, the amount to be increased with the value of the work. This means payment every time a picture is reproduced, even if in the same magazine or journal. Negatives often increase in value when the originals alter or are removed, as in the case of many what are called "street improvements," such as have been made in London much too often of late years. When prints are submitted the photographer should stipulate for a voucher copy of the issue or issues containing his work, and state if maker's name is to be acknowledged. In most cases the copyright should be registered. As to time of sending in prints, it should be one to two weeks in advance for weekly journals, one to twelve months for monthly magazines, and six to twelve months for books. Permission should always be requested and consideration shown during the work for the privilege. I have known and seen rank discourtesy, and in churches absolute irreverence on the part of photographers, which has led to permission being refused those who would truly appreciate the favor. Owners or custodians must protect their property, and in the case of a sacred building insist on fitting reverence.

When it is necessary to alter the arrangement of furniture or other articles they should be carefully replaced, and every regulation scrupulously obeyed. Vergers and other guardians may be grumpy after enduring a succession of inconsiderate visitors who have sorely tried their patience, but they quickly recognize real interest and consideration. I gratefully recall a long series of favors at their hands. Proper courtesy will always meet fitting response. In such places as Shakespeare's birthplace, the restrictions have been made more strict of late years, and the fee for cameras may seem excessive, but both are required or it would be impossible in that small building to keep any kind of order. For fortified places, like Edinburgh and Stirling Castles, permission must be requested of the commanding officer. This article has been prepared, of course, from the English standpoint, regulations differ somewhat in America, but the two countries have much in common, and I cannot lay too much stress on requesting permission to photograph buildings, views and people, and also showing respect and courtesy under all circumstances.



APPLE BLOSSOMS.

W. E. BERTLING.



THE PARTING GUEST.

MRS. J. F. BENNETT.



AT THE FOUNTAIN.

Mrs. Eleanor W. Willard.

PHOTOGRAPHING BLOSSOMING TREES

By C. M. SHIPMAN.



THE mistake is often made in photographing trees in blossom of having most of the tree outlined against the sky, so of course there is no contrast as there would be in a painting where the sky is blue and the blossoms white or pink.

To the eye, there is the contrast in nature of the two colors, but in the print the sky and trees are both white.

One can usually find a position high enough or a tree whose branches droop, or if a background of dark foliated trees are used, the details of the blossoms are brought out. In dealing with such subject it is advisable to focus sharply and develop the negative to good density, but in printing these negatives to get an artistic result, it is best to use a process like the carbon and print from the back of the negative, thus obtaining softness and pictorial effect.

It will be noticed that the parts of the trees against the sky in the illustration accompanying these notes, scarcely show any evidence of being a tree in blossom but are dark toned like ordinary foliage, bearing out a fact that many do not know or think of when exposing plates that nothing in Nature is as white as the sky, and should be relieved against a darker ground if the values are to be properly rendered.



ORCHARD AND SHORE.

C. M. SHIPMAN.




A CHILD.

HELEN W. COOKE.

AN IDEAL OUTFIT FOR THE AMATEUR

By GASTON M. ALVES.

N this I shall advise as to the size of the camera, the kind of lens, and a suitable enlarging box. Lightness and small size is important in a camera, and a 4 x 5 is as large as should be procured. The bellows extension need not be but little over twice the focus of the lens used, unless one wants to do telephoto work. The camera should have a good leather case, which will accomodate six plate holders, thus giving us the use of twelve plates. When one wants pictures larger than the 4 x 5, an 8 x 10 size can always easily be had, as explained hereinafter.

The lens should be of superior type, i. e., an anastigmat. The focus may be from six to seven inches—not less than six, or more than seven. Enlarged images can if wanted, be had with the use of only one combination of the lens. Some who affect the picturesque, advise a common lens, but this is a mistake, as a superior lens will do work which a common one cannot do, and besides by proper use, give any picturesque effect wanted. In fact, it is only a foolish workman who wants a poor tool.

With the above outfit, of course the pictures by contact printing will be 4 x 5 inches. For the majority of photographs this size will be quite satisfactory. If post cards are wanted, use a 5 x 7 printing frame and a bit of nonactinic paper for the side margin, thus giving a suitable margin for the writing. Should we have some much prized negatives, and from which we would like some wall photos, we may by the following method get them quite as easily to say an 8 x 10 size as we can get a contact print: From three eighths or one half inch lumber make a box. In one end cut a 4 x 5 hole to receive the negative. Make a diaphragm or partition to the box, and in the center of the partition fasten in an extra flange to your lens. Screw in the lens, and so secure the partition that the diaphragm of the lens will be distant from the negative, just

one and one-half times the focus of the lens—if the focus is six inches, then the distance should be nine inches, etc. Now procure an 8 x 10 plate holder, and nicely fit it in the other end of the box at a distance from the diaphragm of the lens of three times the focus of the lens—if the focus is six inches, then the distance should be eighteen inches, etc. In getting this last distance it is best in practice to get it by trial. Make the box a little long, and with the negative and lens in place, hold a sheet of ground glass at such a distance in the end of the box, that a distant scene will be nicely in focus. Mark the position of the ground glass, and place the grooves of the plate holder so that the sensitive paper will come even with the marks.

To make enlargements in daylight, expose the negative end to a northern sky, using by preference a gaslight paper. To make enlargements by artificial light, a regular bromide paper, with a bright tin reflector over a 32 candle power electric light will be sufficient for the printing. By the above means, enlargements can be made quite as easily as contact prints can be produced.

The foregoing outfit is an ideal one for a critical amateur. If, however, he wishes to do telephoto work, he will need about double the bellows extension to his camera, as that indicated above.



THE HOUSE ON THE SANDS.

DR. W. F. ZIERATH.



Copyright 1907 by Davis & Eickemeyer, N.Y.

A SPRINGTIME PORTRAIT.

BY CHAS. H. DAVIS.




MISS O —

R. E WEEKS.

THE JEWEL OF GREAT PRICE.

By W. F. OLIVER.

“ONSISTENCY, thou art a jewel.” I have often wondered how the public became agreed upon this proposition; a jewel is generally supposed to be something rare and valuable. As we all know, consistency is a virtue every individual is conscious of possessing, at the same time he seldom perceives this virtue in another; possibly this explains why consistency seems so rare and precious,—possibly it may explain why I take the liberty to write what is to follow, why I studiously avoid anything that may be controverted by scientific fact and lurk in the realm of argument.

In a previous issue, I note a complaint against certain unjust discriminations pertaining to the so-called faking in photographic portraits, most insistence being placed upon the objections raised against those manifestations of faking which are immediately and strikingly noticeable as being wholly foreign to photographic effects, as they are generally understood. The miscarriage of justice seemed to lie in the fact that judges and art critics had overlooked or failed to debar various other forms of manipulation though such might represent a far greater amount of time, energy and skill.

Harmony and unity are universally recognized to be the prime, the basic essentials of pictorial art. Volumes would scarcely elucidate the full import of these art terms, but it is safe to assume they are more concerned with results than with methods. I never chanced to hear a violin solo with a drum-corps accompaniment,—I never chanced to see a painting, part water-color and part charcoal drawing,—I never saw an architectural triumph with gilded domes and shining minarets reared high upon a skeleton frame of posts and girders, nor the full sculpture of a head placed upon a figure in bas-relief; so, when I see a portrait wherein the head, and possibly some of the adjacent anatomy, is rendered in the incomparably fine and inimitable “full presentation” peculiar to photography, while

the other portions are decorated with a series of more or less clever "washes" or an intricate network of real or imitation lines from pen or pencil, and I hear that such portrait has not been highly honored by the critics, I am pleased to believe the result and not the method is responsible,—that there was absolute lack of harmony and unity between the graphic and the photographic portions,—and that the judges were consistent.

Versatility is indeed great but art is so much greater they have little in common. I have seen the "all-round" musical athlete performing upon multifarious instruments, simultaneously, but I observe the virtuoso, the artist, confines his studies and his efforts to one instrument,—delighted if he hopes ever to become a "master" of it; thus it would seem well to draw a distinction between photographic art and photographic acrobatics. Our English brothers and others have spoken of American photographic portraiture as being, despite its many excellences, decidedly unconvincing; this phrase doubtless covers extended ground though some of it may be clear to the most unsophisticated.

Someone prints a head and shoulders against a background of glaring whiteness which he relieves by a few sweeping strokes of lead (pencil),—the production he labels an "etching," "Gibson," whatever fancy dictates or will fool the public into paying the most money. But what is this production? What does its creator mean? Does he mean he can make better backgrounds—possibly drapery—with the pencil than with the camera or does he mean he could draw a better face—if he had time? In the above respects at least, is not the production unconvincing, and if the result is unconvincing is not the method inconsistent? But a slight point is gained if the lines be printed on the paper instead of subsequently placed, the fact remains that the "story" has been told in two different languages.

I do not understand that art takes cognizance of original conditions or difficulties, so it cannot count to argue that one's artifice or substitution has made a picture better,—the critic must consider only what is placed before his vision. So, when a well known writer alluded to various manipulations as 'stunts, somersaults and hoop-performances,' I think he was consistent. At the same time, I do not wholly sympathize with



THE GEISHA.

Misses W., and G. Parrish.

the idea of discriminating against a certain effect because it resembles some other medium of expression. I note the vast number of photographic reproductions of celebrated etchings, of the great paintings by the old masters,—I note the high prices being paid for many of them and yet I never hear them rated as inartistic or imitations,—the painters and critics of to-day advise their purchase and critical study. If one can draw or etch a whole picture and he has the opportunity to sell a dozen duplicates I believe consistency will permit the use of photographic means and not prefer charges of imitation or “faking.”

The calling of these various productions by fictitious and misleading names is another proposition and manifests a most short-sighted policy,—the policy of looking only to the results, the financial results of to-day. To persuade the purchasing public of to-day that certain new effects are highly artistic because they are new and, in one sense, unique, when the creator knows there is no art about them,—scarcely individuality, when he knows the most important feature of the portrait, the face, has remained unmolested and in no wise superior to the ordinary work without the fancy cognomen, is but to discredit honest and legitimate effort and bring contempt for all things photographic as soon as the public becomes aware of the deceptions imposed upon it.

When I see in the voluminous pages of modern advertising, some get-rich-quick scheme, whether it be the making of concrete bricks or some depilatory lotion, equally efficacious for whitening the teeth, blacking the stove or cementing broken glass, I think if there was anything “in it” everybody would be trying the great opportunity. The grand, new things in photography strike me no differently. When I read the advertising literature which relates the ease of acquiring the height of photographic skill, the short time required and particularly the liberal salary received by graduates,—several times the salary of many men who have spent more than a fourth of their “allotted span” in attending school, I do not wonder the public has become convinced the “department-store” prices are all that consistency can demand. When I read of a brief and inexpensive course of instruction which will enable a photographer to immediately produce portraits superior to

many sold in New York for a great price,—a price twice the cost of the course of instruction,—I realize that these New York purchasers *believed* they were buying something valuable and artistic, I realize that advertising is indiscriminately placed wherever it will possibly bring returns and that, by the time the public has been intermittently bled and enlightened a sufficient number of times, photography will be alongside Humpty-Dumpty,—where all the King's horses and all the King's men can't pull it up again. In plain English, I believe these indiscriminate, unqualified advertisements which enthusiastically indicate that anybody can learn photography in a marvelously short time,—if they have the price—are doing more to bring ruin and confusion to photography than all the combined efforts of devoted workers can possibly do to build it up. It may mean cash but it doesn't mean consistency.



"ONE MATCH."

H. B. CONYERS.

THE PINHOLE FOR WIDE ANGLES.

By J. A. ANDERSON.



RECENTLY a picture of a church building was wanted, for which the only practicable point of view was directly in front, on a narrow street, which abutted on the principal street upon which the church was situated.

With a lens of sufficient focal length for a proper rendering of the perspective, the necessary distance of the camera from the church brought into undue prominence the sides of the narrow street, with some signs and other objectionable features, besides rendering the church buildings subordinate in apparent size, to the nearer buildings along the street.

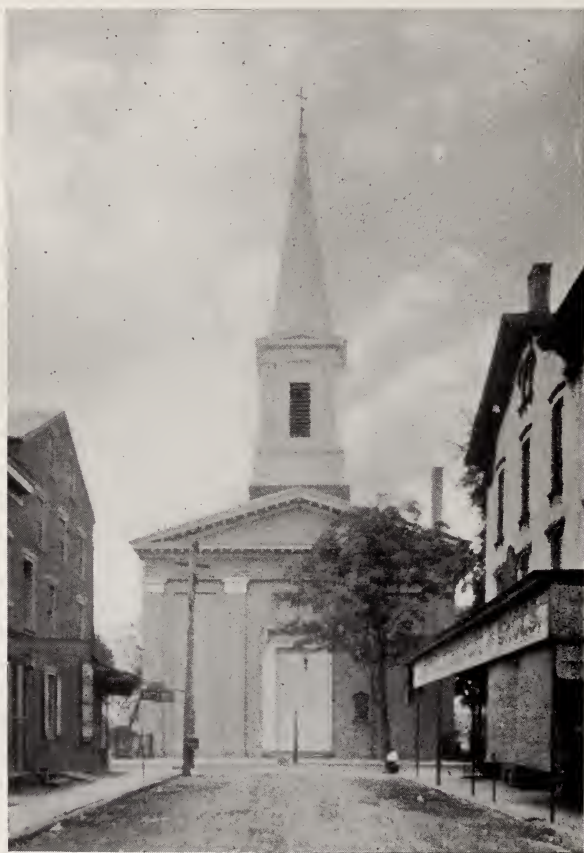
The only resource was a nearer position and a "wide angle" view. There being no lens available for this, the pinhole was used. The picture was taken from a point at a distance from the church about equal to its height and where most of the objectionable features were excluded. To get the building of suitable size, and properly placed on the plate, at such distance, required considerable elevation of the front board, in addition to tipping the camera, with corresponding use of the swing back, as well as a very short distance from the pinhole to the plate.

The plate was 5 x 7, distant about $3\frac{1}{2}$ inches from the pinhole, which was No. 4 of the system recommended in *The Photo-Miniature*, No. 70, on "Advanced Pinhole Photography." and the exposure was calculated by the method therein prescribed. In a dull light, measured by the Wynne meter, the calculated exposure was 45 seconds. An addition of 15 seconds was made to this on account of the lesser degree of illumination of the sides of the street, as compared with that of the church building.

The definition of the principal object was, of course, somewhat softened but not so much as to differ noticeably from the usual result with the lens. There appeared to be, perhaps, a little greater comparative degree of confusion at the sides,

which was not objectionable and may have been partly due to the short extension.

The very short extension necessarily used was much less



Wide Angle by Pinhole.

J. A. ANDERSON.

than that recommended as best by authorities on the subject, and the results in definition and illumination at the sides of the plate, might have been better with a greater distance. The subject of the effect of different degrees of extension is discussed in the number of *The Photo-Miniature* above referred to and in No. 27 of the same publication.

It is well understood that the perspective is not satisfactory in wide angle pictures and it is best to avoid them when prac-

licable. The present case is no exception to the general rule, although the defect was reduced to a tolerable minimum by presenting the church building in comparatively large proportion and retaining as little as would seem desirable of the adjacent buildings.

In the matter of the rendering of the perspective the pinhole has no material advantage over the lens, for the same extension, but a point in its favor is that its extension may be varied, while that of the lens is controlled by its focal capacity.

It may be added, for pinhole experimenters, that the writer has found in German silver, about as thick as medium writing paper, a satisfactory metal, the punching being done in the manner described in *The Photo-Miniature*, No. 27, by a needle broken off at its largest part and ground square. In selecting needles it was found that those bearing the same number of the maker could not be relied upon for uniformity in size, so that the average of the measure of a number laid alongside of each other was not a correct indication of individual size. The test relied on was by a home-made gauge, which magnified the thickness 20 times and gave very satisfactory results in the final selection.

Upon the same day on which the church picture was taken, the pinhole was used for a picture, also a "wide angle," of an inscription on the side of a monument which stood so near the church as to allow but little more room than for the camera and a very short extension, with no space for the head in focusing. The size and position of the image had to be determined by calculation and measurement. The result showed the correctness of the manipulations, but the experiment was not an entire success, because of the inadequate illumination of the lettering. It is mentioned as a suggestion for an expedient in like circumstances.

It is not at all improbable that the pinhole is being largely used in the manner pointed out in the foregoing, but if so, the excuse for the present presentation must be that the writer does not happen to have met with any statement to that effect.

One of the illustrations herewith shows the church picture referred to, the other being a pinhole landscape with seven inches extension for a 5 x 7 plate.



MEADOW AND WILLOWS (Pinhole).

J. A. ANDERSON.



MISS MISCHIEF.

MRS. W. W. PEARCE.



"THERE ARE THE POPPIES, MAMMA."

OSCAR MAURER.



MY SUNSHINE.

MRS. W. W. FEARCE.

THE GARDEN AS A STUDIO.

By OSCAR MAURER.

YES, little people and gardens are made for one another. In no other spot are children so happy, so full of naive grace and playfulness, so prettily unconscious. I noticed the lagging step and backward glance as nurse directed her charges within doors to the studio, and was struck at the change from indifference to eagerness as the children gathered about the open window overlooking the garden.

The day was soft and luminous. Sun there was, but it shone through clouds, throwing delicate shadows—a "Leonardo day." I had been wont to call it. "For portraits, have a special studio," one gathers from Leonardo da Vinci's notes. "The walls should be painted black, with canvas curtains for the sun.

Or, if you haven't the canvas curtains, work out-of-doors when the light is soft, as if shining under water. This is the favored condition of the atmosphere giving special charm to the face." Here was my opportunity, and the children's.



THE SHADOW ON THE DIAL.

OSCAR MAURER.

So gaily we went back among the flowers, leaving the studio with its toys and baubles. We watched the butterflies among the posies, heard the birds sing, and became friends at once. The rest was easy.



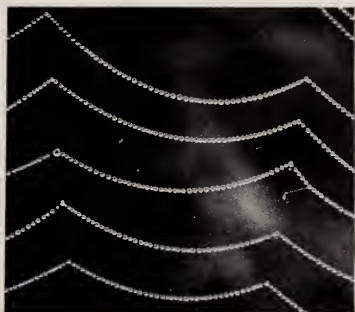
IN THE GARDEN.

OSCAR MAURER.



MEDITATION.

MRS. J. E. BENNETT.



Dew on Spider's Web.



Dew on Strawberry Leaf.

PHOTOGRAPHING THE FORMS OF WATER.

By WILSON A. BENTLEY.

[Illustrations by the Author.]

READERS of the ANNUAL may possibly recall that the two preceding winters, 1905, 1906, were somewhat unfavorable for our work of snow crystal photography. Experience has proven that it is rarely the case that more than two unfavourable winters come together, and succeed one another. Hence it was to be expected that the winter of 1907 would be a favourable one. This proved to be the case, and it goes on record as one of the most favorable ones, all things considered, occurring since we began our snow crystal work in 1885. This is somewhat strange in view of the fact that the snow crystal season closed at an unprecedentedly early date, February 15. The winter storms that occurred, however, previous to that date, though not numerous, were very prolific of perfect and interesting snow crystals, and furnished us sets of crystals, which for beauty, complicity of form and oddity of design, rival any among those comprising our already numerous collection.

The writer secured in all some two hundred new photographs of these crystal beauties from on high, a few of which are reproduced to adorn these pages. The snow storms of this winter furnished a larger number than usual of very rare and odd twin crystals, and other strange forms. As heretofore, we found many snow crystals similar to, yet not of course ex-

actly like unto, some of those found during previous winters. Yet it was amazing how many of them were new to us, and whose semblance we had never seen before, and we were amazed afresh at this new proof of the infinite diversity of the forms of the snow.

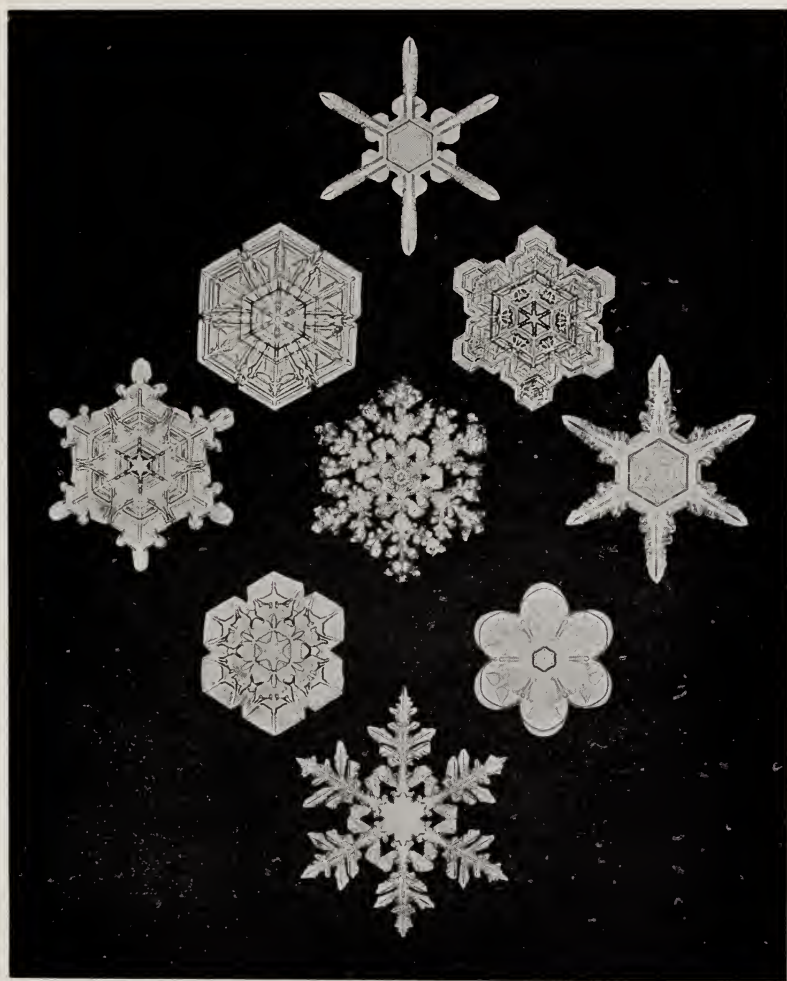
Our attention and photographic efforts, however, were necessarily divided, between the gems from cloudland, and the scarcely less beautiful frost jewels that so often appeared upon and beautified our window panes. The cold winter was unusually favourable for the formation of window frost, and we secured over a hundred new photographs of such. These, too, astonished us afresh by the diversity and elegance of their formation.

Stars and ferns, balsam firs, twigs, leaves, rosettes, coral, lace work, and numberless other objects seemed to be imitated among these jewel like window pane frost designs. Among them were seen some new types not previously noted.

During the winter, the writer carried on some very interesting and instructive studies of window frost, with the aid of a sling psychrometer (telling humidity, etc.,) kindly loaned for this purpose by the United States Weather Bureau. These studies were carried on with the purpose of ascertaining what temperatures and humidities favour or determine frost form type and structure. Space forbids mention of the results here, but readers of the *ANNUAL* who wish to pursue the matter further may find much of interest in the writer's memoir, "Studies of Frost and Ice Crystals," with 270 illustrations, soon to be published by the Weather Bureau.

Persistent readers of the *ANNUAL* may have noted how the writer's photographic studies have broadened as the years have gone by, until they now include most of the more important of the many forms of water, both liquid and crystalline. The realms of the snow, frost, ice, hail, clouds, raindrops, and lastly that of the dew were entered in turn, and explored by the aid of the camera and the dry plate. Each realm has been found to teem with beauties unsuspected, and has richly repaid our every effort. The last one we have entered, that of the dew, is replete also with interest and charm. Even the dew has its own peculiar beauties both of form and arrangement, and plays a part in beautifying Nature. Its realms also furnish charming sub-

jects for the photographic camera. How beautiful the gleam and sparkle of the dew drops on the grasses at early morn, and



SNOW CRYSTALS.

WILSON A. BENTLEY.

how regular is their arrangement upon certain objects, and particularly on the spiders' webs and the strawberry leaves.

Dew photography possesses some peculiar difficulties sufficiently formidable to try the mettle of even the most ad-

vanced amateur or professional. It takes not a little skill and patience to secure the best results. A long extension camera, however, and a one-quarter size portrait or similar lens is perhaps best for this work. Very small stops should of course be used in the lens so as to secure necessary depth of focus. Dull black or gray backgrounds are preferable, and should be placed beneath or back of the grass or plant leaf, or spider's web, to be photographed, and placed in position if possible a day or so in advance of the deposition of the dew. It is best in most cases to shade the dew laden object from the direct sunlight while exposure is in progress. When focusing is done, and all is ready, select for exposure some moment when there is not the slightest breeze stirring the air, as otherwise the dew drops may come out blurred in the picture. What charming subjects for the camera dew laden objects are, may be realized from our photographic illustration, picturing a section of a dew laden spider's web, and a dew bedecked strawberry leaf. The dew collects differently upon different objects, and upon different species of plants and grasses, and it is a matter of much interest not only to observe these differences visually, but to secure photographic reproductions of them.



WINDOW FROST FORMS.



WILSON A. BENTLEY.



"MISTRESS HARRIET."

W. H. Thompson.

ON THE CONSTRUCTION AND APPLICATION OF A TESTING CHART.

By RICHARD TROTTER JEFFCOTT.



O build and install such an apparatus as our title suggests was a problem before me in the early months of this year. Perhaps the most difficult point to be overcome was the adapting of such an instrument to our store conditions. Taking into consideration the many problems confronting one, the mode of construction and the application of the chart to a commercial enterprise will prove interesting reading.

The fact that our sales of high-grade lenses had increased to such an extent that to present to intending purchasers a superior method of determining what particular lens would best suit his requirements was ever before us. The lens buyer had only such description and data as the lens catalogues gave him. He then might possibly select a lens and give it, in his own way, a thorough test, yet hardly with the ready understanding of the lens's capabilities. The lens chart would give to him an opportunity to test all makes of lenses along the same line and under precisely the same conditions, and, further, give him a complete record of what he might expect from each and every lens tested.

Where one was buying a second-hand lens of perhaps unknown specifications, we would be in a position to demonstrate the best that particular lens would perform on the chart.

Having before me the above advantages that such an apparatus would give to the public, and, further, having collected data from many sources, together with special trips to New York and Rochester, I was now in position to put the idea into practical use.

It may, perhaps, be well to mention here at the outset that criticisms of our idea were welcomed and further given every consideration, yet if we have erred in building an apparatus heavier and more solid than our needs required, we trust our judgment suggested that strength and solidity guarded against our worst enemy—warping.

Rearranging our store fixtures provided a space 3 feet by 13 feet for the specially constructed platform to support the entire apparatus.

Detail drawings are herewith presented, giving, in addition, figures indicating sizes and heights, and a descriptive outline of construction may be in order. Our platform was built



FRONT VIEW OF APPARATUS FOR DETERMINING DEPTH OF FOCUS.

about $3\frac{3}{8}$ inches above the floor line, the frame was made of 3×4 inch joists and braced every two feet. The flooring was of Georgia pine, all being of the best selected stock, thoroughly dried and braced against warping. Attached to the outside of the platform a steel track was secured, same being $\frac{3}{8}$ inch higher than the platform proper. This was used for the mov-



LENS-TESTING CHART SHOWING CAMERA,
STAND, CHART AND PORTION OF PLATFORM.

John Haworth Co., Phila., Pa.

ing of the chart and stand to any desired position. Just outside the track was placed a facing, giving to the platform a finished appearance. The erection of the upright supports for the chart was given particular attention, and the following data may be interesting. A 4-foot frame work (cross-braced) was first laid down, and then the two main uprights and angle braces were bolted and secured into position. An open frame of $1\frac{1}{2} \times 8$ inch pieces was now bolted on the face of the uprights, and directly behind additional cross-framing was done, presenting an absolutely rigid support, yet easily movable on the track. Specially selected rollers for this purpose were let into the ground framing. The uprights and framing were chamfered, presenting a neat appearance.

A piece of slate, 1 inch thick and measuring 48×56 inches, was now securely bolted to our facing frame. Some idea of the weight of this completed apparatus may be gained by mentioning that the slate alone weighs 272 pounds. At this point special attention was given to the true position of the slate, and our later tests showed that the completed apparatus was "true" in every particular.

The construction of the camera stand was next in order (sketches of same are herewith presented.) Similar ideas in framing the base were adopted, as also the adjustment of the rollers. From the floor line to the top of the stand our measurements showed 4 feet $\frac{3}{4}$ inch; this in connection with the centre of our chart and the camera ground glass centre measured exactly 5 feet from the floor line. At this point it may be mentioned that, on the completion of the entire apparatus, the camera front board had to be elevated less than 1-16 inch to bring the centre of ground glass, centre of chart and axis of lens in union. The camera stand was securely framed and paneled, outside dimensions being 2 feet $10\frac{1}{2}$ inches wide by 2 feet $7\frac{1}{2}$ inches long. For the better viewing of the ground glass a wide step was made part of the stand proper, permitting one to readily examine the critical focusing without effort. The back of the stand was left open, a shelf provided for the storage of holders and camera case. A special sliding feature was arranged on the top of the camera stand; the drawings will, perhaps, furnish a complete idea of the framing of this slide.

The camera selected was a Folmer & Schwing, 11 x 14 Sky Scraper. This camera possessed all the necessary points required, and, in addition, was very rigid and compact, strongly made and having an extremely large lens board. The camera was first securely fastened to the sliding top and held in position by specially constructed guides (having movable adjustments and being locked by thumb bolts in position). Outside and inside guides were furnished, guaranteeing a positive position to the camera.

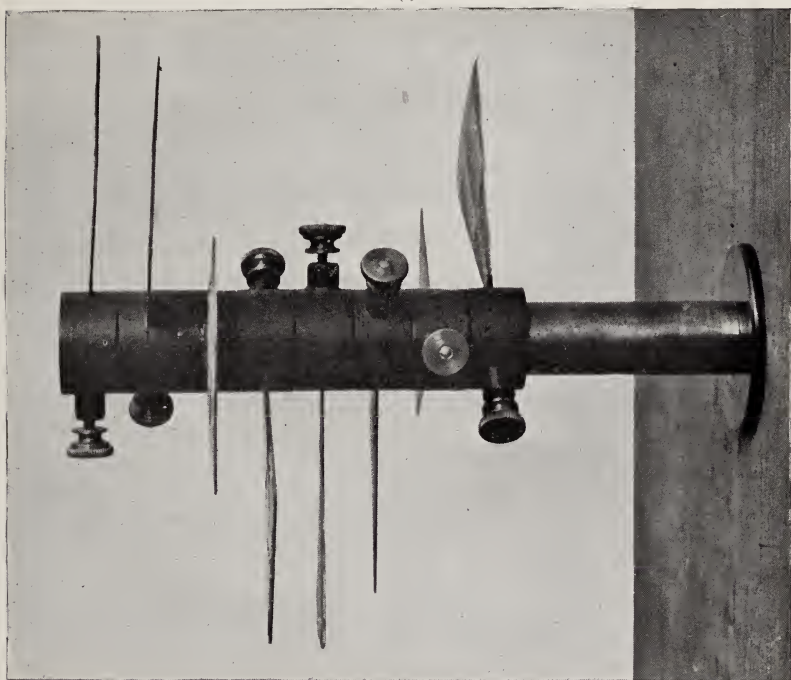
An Iris flange was fitted to the lens board capable of opening to 4 inches and closing down to $1 \frac{1}{5}$ inches. This obviated the necessity of securing special flanges and lens boards for each lens. The ground glass screen was ruled, showing divisions from 4 x 5 to 10 x 12. At a later period we expect to have in position a brass frame carrying the focusing hood.

The placing of the paper chart on the slate was a piece of work requiring absolute care and precision. The chart (paper) was in three sections and after the face of the slate had been dressed to an absolutely flat field it was moistened and pasted in position. After being entirely dry it was critically tested and found to be in perfect position. The lighting of the chart proper was, after all, the most trying experiment. Various methods were suggested and found unavailable after practical tests. From what I have seen of the lighting of charts (mostly by daylight) I am led to believe that no chart of any size is evenly lighted, yet that understanding of the matter did not prove that such was impossible. Owing to our location daylight was entirely out of the question for illumination and the following plan, with some modifications, was adopted. From the ceiling were hung three window shades of the best material (absolutely opaque), one on each side and one directly back of the chart to cut out daylight. A special wire, 110 direct current, was arranged for rheostat connections, and switch boxes were especially arranged at convenient points and run to our lamp.

From experiments at hand would say that the method employed was the best known. The lighting of the chart was obtained by projecting the light directly upon it. For this purpose a Stern's Midget Arc Lamp was used. A lamphouse

with 5-inch (diameter) condenser was arranged in position, and in connection with a ground glass screen an even distribution of illumination was obtained. From data at hand, using an ordinary fast plate, the necessary exposure employed was about eight seconds.

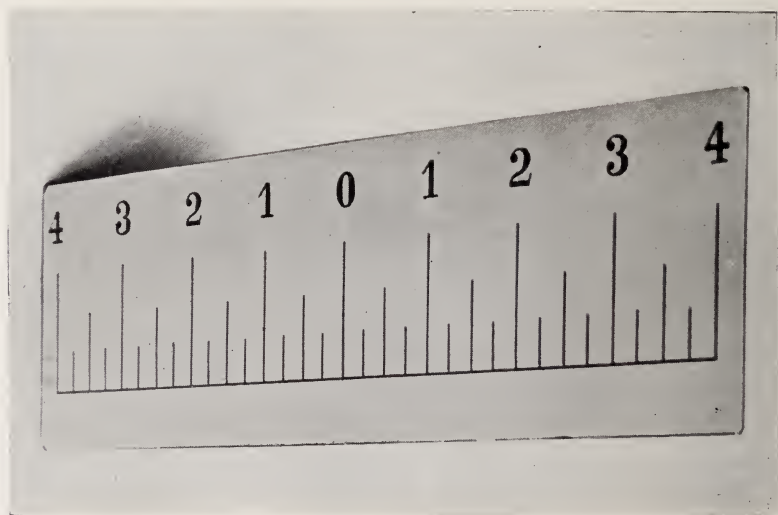
The above description applies only to such tests as the flatness of field and image circle given by a lens. For the system of focusing for depth two ingenious apparatus were prepared for us by Mr. L. J. R. Holst, of the C. P. Goerz American



SIDE VIEW OF APPARATUS FOR DETERMINING DEPTH OF FOCUS.

Optical Company. Cuts of both are shown and perhaps an explanation of each would be appreciated. Arrangements had been made in the original design for securing this apparatus directly to the chart, but owing to the necessary framing of the back the idea had to be abandoned and a special arrangement made. Our first apparatus shows a brass tube 7-16 by $4\frac{1}{2}$ inches long, on which are mounted (fan-shaped) eight seg-

ments of a circle. Each segment (brass) is fastened securely to the tube by a screw and securely held in position. Printed matter is glued to the face of each segment and varnished. By the adjustment of the segments the actual depth of any lens can readily be determined, consideration being given focus of lens and stop employed. Our second scale shows a specially constructed brass plate $2\frac{1}{2} \times 8\frac{1}{2}$ inches projecting from the board at an angle of 45 degrees. The face of this scale shows a series of figures from 0 to 4 running in each direction from the centre. Each large division measures 1 inch and is subdivided into $\frac{1}{4}$ inch parts.



SCALE FOR DETERMINING DEPTH OF FOCUS.



PORTRAIT.

S. H. Lifshey.

ILLUSTRATING A STORY.

By J. ELLSWORTH GROSS.



LABORER had watched an artist work for days on his painting. When it was finished the following conversation took place.

"Did 'ee ever try phortygraphy?"

"No."

"'Tis a dee-al quicker."

"Possibly."

"An' tis a dee-al more like the place when ee've done."

Isn't this a plea for naturalness? The veracity of the lens places its statement in legal affairs above that of the word of man. Its truthfulness is unquestioned in depicting nature in all her moods and in her constantly changing scenes within her realm. We have but to view the glorious sunsets and the sudden change from blue sky to an awe inspiring thunder storm to realize what great value there is in quick and exact reproduction, and also that we owe proper respect to the great Artist that doeth all things best.

The public has the right that all things placed before it typographically shall be, both on the literary and pictorial sides, free from distortion. The pictorial photograph is a hold-back to the over imaginative and enthusiastic writer who runs away with his story often times to a point where imagination should be spelled with a synonym of three letters. We have samples of this in some correspondents to our daily papers. A good story must be had, truth or no truth—even to caricaturing of nature.

An illustrated article will always have a preference, not only that the picture adds to the attractiveness of the article and to the publication, but the mission of the illustration is explanatory as well. It often tells much in little. Seeing is believing and feeling, and feeling represents the naked truth which is demonstrated in the proof of the fact by the truthful photograph.

Naturalistic photography is the aim in illustrating Carrie Jacob-Bond's "Old Man." Her folk songs treat of the homely and little things of every day life in the most simple way. Her poems are touches of pathos or humor. And this old man photographed at his own home in his work-a-day clothes adds to the melody that "touches" and in its simplicity we have tried to place the strongest light where it will accent the motif of the poem and yet hold the highly artistic.



"MY OLD MAN'S HEAVEN."

Copyright, 1905, by J. Ellsworth Gross.

Out of the old pump and the rusty tin cup we drank together, and we sat by the wood pile while Mrs. Bond told this elderly couple some of her songs in verse. His good wife brought apples and pears, a glass of home-made jelly and crackers for a mid-day luncheon and during our stay on this beautiful farm, we drank heartily of rich milk and fresh cider, but deeper draughts we drank of peace, contentment and harmony of man with nature.



"WHAT'S THE USE."

Copyright, 1906, by J. Ellsworth Gross.

(Illustrating Carrie Jacob-Bond's "Old Man.")

A LENS HOOD AND ATTACHMENTS.

By JAMES E. CALLAWAY, D.D.S.



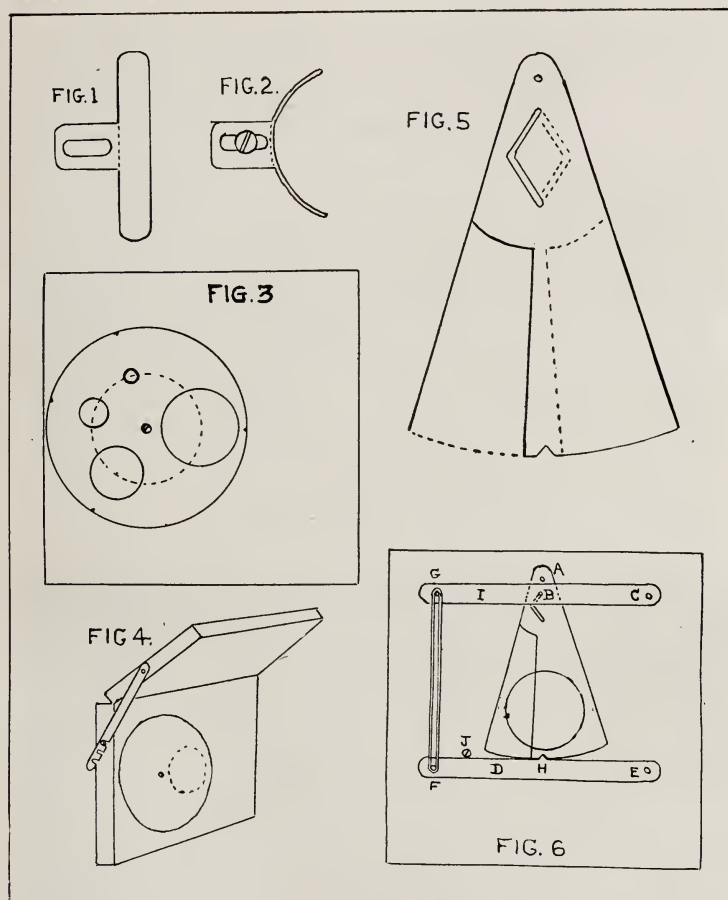
WHEN the back combination of a lens is to be used, it naturally follows that the diaphragm of the shutter is set too close to the back lens to properly serve its purpose. It is of course impossible to move the diaphragm forward; but it is a simpler proposition to set the diaphragm wide open, and attach to the front of the tube a set of stops which will answer every purpose. The hood described in this article may also be equipped with a wing to shade the lens when the camera points toward the sun, and may be used as a foundation for other attachments to be described. As the diameter of the lens tube varies in different cameras, dimensions cannot be given; but no difficulty need arise on this score, as the parts may be placed on the camera and fitted as the work progresses.

The first requirement is a square piece of one-quarter inch board, in which an opening slightly smaller than the lens tube is made. Two pieces of thin brass are cut like Fig. 1, and bent like Fig. 2. These are placed on the back of the board, facing each other, to clamp the tube. When once set with the screws, which should be round-headed, they will require no further adjustment.

On the front of the board place a disc of pasteboard, on each side of which some of the black paper from a film roll has been pasted. In this disc cut holes for the stop openings. About four of these will be sufficient. The dotted circle in the drawing, Fig. 3, must be about four times as long as the diameter of the hole in the board, to admit of proper space between the stops. Notch the edge of the pasteboard opposite the center of each stop, and put a peg in the board to show when stop is centered.

To the top edge of the board hinge a piece of wood of the same size as the board. This is to act as a shade against direct sunlight, with either full lens or back combination. It may be held at the required angle by the notched strip of metal shown

in Fig. 4, one strip being sufficient. It may be also changed in position by rotating the entire board on the lens tube.



Many interesting stop experiments may be made by setting another disc on the board, and cutting vertical, horizontal and other openings in it. This second disc must of course lie over the first, and must have one full opening so that when set full it will not interfere with the first disc. One opening may be covered by a piece of cleared film dyed in a proper yellow dye, to act as a ray filter.

Using the board above described as a support, a very efficient shutter may be improvised from pasteboard or metal,

if the lens shutter should become crippled. Two leaves are made as shown in Fig. 5, and slotted on the lines marked. These leaves are pivoted at A in Fig. 6. A wooden strip with a peg through it into the slots, at B, is pivoted at C and lies across the leaves. This is the actuating lever. The trigger shown at D is pivoted at E, and a thin rubber band from F to G keeps the trigger in the notches of both leaves at H and also pulls down the lever when the trigger is released. The shutter is released by pressing down trigger D. This releases it from slots H and the lever, I, being pulled down, forces the leaves apart by its path through the angular slots, and then pulls them together as it completes its stroke. The shutter is reset by raising the lever I to its former position, when the trigger again engages the leaves. If the leaves are of pasteboard put a screw at J to take the pressure of the trigger off the leaves.

When not in use the shade wing of the hood folds down over the board, and so makes the device very compact.



EARLY VIOLETS.

MRS. W. W. PEARCE.




THE FIRST VIOLIN.

A. B. HARGETT.

A STORY WITH A IMORAL.

By J. W. LITTLE.

 ONCE knew of a woman one of whose greatest trials in life was a continual conflict with that noxious hexapod, so dear to so many of our hearts, familiarly known as the bedbug. The odoriferous insects vexed her almost constantly. Daily, and with infinite patience and painstaking, she sought out their rendezvous, while at night, with fear and trembling, she lay down in their habitat to dream of or perchance to be molested by them in fancy if not in fact. So acute were her olfactories that she could detect the presence of a bedbug in the adjoining flat of her neighbor (whence all bad bedbugs come, as any woman will testify) the moment it headed her way. To have her epidermis punctured by the cimex lectularius proboscis would almost superinduce nervous prostration, and the mere mention of bedbugs within her hearing meant—well, she never forgave it. It shows a poor sense of propriety to speak of ropes in the presence of a family a member of which has been hanged.

This woman's efforts to get rid of the pests had been as unremitting as they had been unavailing. She had tried every remedy and every preventive she could conceive of or could learn of from books read in secret, but with all her precautions they loved her still. She was in fact becoming bughouse herself.

Finally a sympathetic friend, to whom she had appealed in strictest confidence, and who knew much about such things (as every woman does, though few will admit it), advised her to use a solution of corrosive sublimate as an exterminator. She procured some at once and got busy with it. The greybacks made a gallant stand but at last were forced to retreat and capitulate. Her joy was great. Like the fable of old, she now had as it were but to rub the magic lamp and forthwith the bedbugs disappeared.

Needless to say, therefore, when our good woman dis-



A HILLSIDE PATH.

W. H. Zerbe.

covered a few days later that in a place where the liquid had been applied to the border of the light green paper with which the walls of the room were covered, and where a small detachment of the enemy had been located, there it had left a stain also, she was disheartened. This was a contingency with which she had not reckoned. Still undaunted, she repaired to a nearby druggist (a man of much tact and learning and one always to be trusted with family secrets), who, with the instinct of his kind being ever ready to suggest a substitute, assured her that bichloride of mercury was a much better remedy than corrosive sublimate and that the former would not stain. He therefore prepared a solution forthwith, added a few drops of peppermint by way of disguise, and charged her a price which netted himself five hundred per cent. profit.

Armed with the new weapon, and with blood in her eye and insecticide in her heart, she hastened homeward and again set forth to conquer. The bichloride of mercury worked well, and as at last account she had kept its use confined strictly to the legitimate haunts of the bedbug, and had not experimented with it upon the green wall paper, she was very happy, and I am told that upon her recommendation the kind hearted apothecary thereafter received many renewal orders, especially from weakly constituted ladies who occasionally in the spring-time felt the need of a little bedbug medicine that was safe and sure.

I have no doubt most of my readers know that corrosive sublimate and bichloride of mercury are one and the same thing, as the chemical is one frequently used in certain photographic processes. The point I want to make, however, is that in the conduct of their work too many photographers are in many respects like this woman in her efforts to free her house of bedbugs. They are earnest, enthusiastic and to a degree painstaking, but they are too superficial, too ready to condemn without sufficient trial, too ready to approve without adequate knowledge. They never get beneath the surface of things, accepting what they read or hear without question, and without taking the trouble to conduct a little confirmatory investigation on their own account, either in thought or in practice.

Of course the ordinary amateur, who takes up photo-

graphy as a mere pastime by which to while away an idle hour, is not to be presumed to make an exhaustive and scientific research into all the whys and wherefores of the myriad of details and processes connected with the subject. But if he continues to engage in it, he certainly should at least endeavor to master its rudimentary principles, not only on account of the amount of time and money that he will save, but also because of the much greater amount of pleasure it will yield, both with respect to the satisfaction that comes of doing things understandingly and well, and the feeling of pride that comes afterward in having something which he may not hesitate to show as the result of the time he has spent in the photographic hobby.

For instance, the first process in the production of a photograph with which the amateur has to contend is the making of the exposure. Let us suppose that he is attempting a portrait and that he is now engaged in focussing the subject upon the ground glass. Amongst other considerations it should be apparent to him that it is usually better to rack the lens out, rather than in, when it is desired to produce a satisfactory differentiation of planes or a slight diffusion of focus. Why? In making a snap-shot with a hand camera it is usual to have the scales marked so that the lens will be racked in as far as possible with a given stop without throwing the subject or the foreground perceptibly out of focus. Why?

These are simple matters and require but an elementary knowledge of focussing to explain their importance, and yet I venture there are many photographers who do not know the value of these little expedients or who could even say why the treatment in the one instance is directly the reverse of that in the other.

And how may the amateur, who does not care to go too deeply into these matters, acquire a good working knowledge of photography with a minimum amount of study? It certainly is not required that he should possess a complete library of photographic literature, however desirable that may be from many points of view. It has been well said that the poor student often has greatly the advantage over the wealthy one because he has but few books and must know their contents before he can buy others. In the study of photography, one or two

well chosen books, with particular reference to the work in hand, thoroughly mastered, are of far greater value than a score of books half read, even though they purport to cover the whole field. It is not necessary that the student should read a great deal but his reading should go hand in hand with his practice. The concrete should be well mixed with the abstract. The most profitable study does not consist in extensive reading, but rather in short flights frequently repeated. Take your book with you on your photographic trips. Read it at odd moments and apply the knowledge thus gained while it is hot.



OLD CHINATOWN,
SAN FRANCISCO.

DR. C. GEO. BULL



THE LAST STAND.

J. M. WHITEHEAD.

PYRO AND ITS PRESERVATION.

By HENRY F. RAESS.

BEFORE proceeding with this paper I have a few words to say by way of introduction. I have been working on this matter for two years and brought it to a close about eight months ago. I wanted to see if there was not some better method for keeping pyro in solution than those in use at that time. I also wished to try the influence of large and small quantities of sodium sulphite, the minimum quantity necessary to have in the developer and the relative properties of a pyro developer with and without sulphite. And further, the maximum and minimum quantities of pyro necessary in a developer to obtain results such as we require in our every day work.

Considering the large amount of matter which has been

written on this subject it may appear strange that anything could be added at this late date. But if we stop to examine some of the methods proposed and used we will see that they are far from ideal. Pyro has been used in photography since 1851, but no one thought of a preservative until 1882 because it was not until dry plates came into use that an alkaline pyro solution was necessary. The pyro solution used previous to this date was acid or more rarely neutral. A preservative is something which will prevent the pyro from oxidizing before having accomplished its purpose.

Exception may be taken to the statement that salts of sulphurous acid act as or are preservers of pyro, for it is well known that sodium sulphite will oxidize with greater or lesser rapidity according to conditions. It was recently found that certain organic compounds even if only traces of them are present, will greatly retard the absorption of oxygen by sodium sulphite in solution. So that, when we have a solution containing sodium sulphite and pyro they will mutually preserve each other. However, it is also well known that sodium sulphite is alkaline and under such conditions pyro will rapidly absorb oxygen, but to prevent this various schemes have been proposed, to neutralize this alkalinity with various acids, or to add some acid to the pyro solution and mixing the sulphite with the alkali.

As the Lumière brothers recently pointed out, the presence of salts in the developer which do not take part in the development only retards the action. At present there are at least four compounds containing sulphurous acid suitable for the preservation of pyro (and of course other alkaline developers); they are: Sodium or potassium metabisulphite, acetone-sulphite and sodium bisulphite.

In this paper I shall consider only sodium bisulphite as a dry salt to distinguish it from the liquid bisulphite. The reason for choosing this compound is because it does the work equally as well and is much cheaper. As sodium sulphite has a retarding effect, experiments were made to see if there would be any advantage in using a pyro developer without sulphite on plates having a short exposure such as snap-shots.

The strength of the developer was pyro one grain, anhydrous sodium carbonate eight grains and water one ounce.

It was found that a small quantity of sodium bisulphite did not influence the development, but did prevent the developer from oxidizing rapidly. The images on the plates had the same qualities whether the developer contained sodium sulphite or not. Tests were then made to determine the smallest practical quantity of sodium bisulphite necessary to preserve the pyro and the subsequent developer.

To obtain the best results one grain of pyro requires two grains of sodium bisulphite (a larger amount is unnecessary.) This amount of pyro and sodium bisulphite requires eight grains of anhydrous sodium carbonate. The above amounts in one ounce of water yield the best results for all ordinary work. The maximum amount of pyro per ounce of developer was found to be four grains.

For convenience two stock solutions are made, one containing pyro, eight grains, sodium bisulphite, sixteen grains; and the other, anhydrous sodium carbonate sixty-four grains, to every ounce of water. Thus every dram of pyro solution contains one grain of pyro and the alkali eight grains of anhydrous sodium carbonate; in other words equal volumes should be used. One to two drops (not more) of a ten per cent. potassium bromide solution to every ounce of the developer will keep the plates clear if they have a tendency to fog. This small amount of bromide does not influence the development. I have a pyro solution made ten months ago, the stock bottle only partly filled, yet it has only a faintly yellow tint. Sodium bisulphite is a dry white powder, the solution has an acid reaction. In price it is the same as any good quality of sodium sulphite.

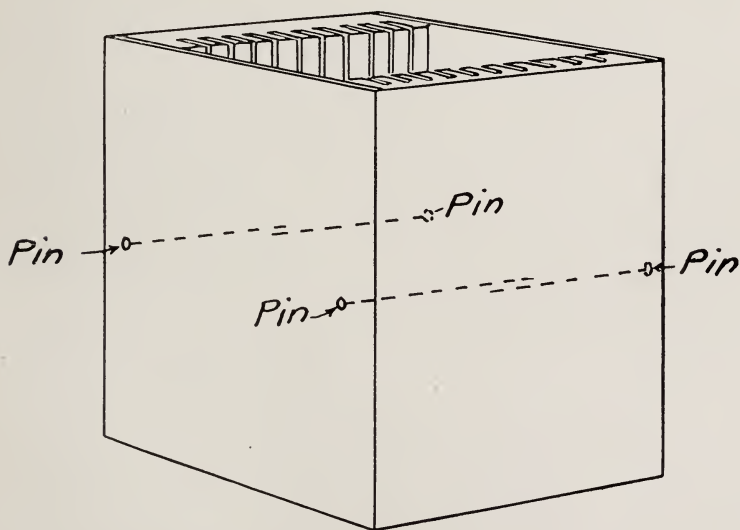
FILM PACK DEVELOPMENT.

By GEORGE RETTIG.



OME of the ANNUAL readers may be interested in a method of using the developing tank for "Film packs."

The accompanying illustration shows a rack for holding the cut films during development, fixing and washing. Two strips of wood have grooves about one-eighth of an inch deep sawed in them. After being made waterproof they are fastened together, the top and bottom of of



the rack being left open. The films are slid into the grooves and held in place by pins pushed through holes drilled across the grooves and as near the face of the strips as possible. These pins also keep the films from touching each other during development. After being thoroughly wetted to prevent air bubbles, they are developed and fixed in the usual manner.

A piece of stiff wire sharpened to a chisel point makes a good awl to drill the pin holes with.

THE PHOTOGRAPHIC MAGAZINE AND ITS READER.

By FAYETTE J. CLUTE, Editor "Camera Craft."



THE average reader of a photographic magazine feels that he could give the editor some valuable pointers on the getting out of a publication that would more nearly fill the requirements, and he sometimes goes to the trouble of putting his advice into written or spoken words. His suggestions are always acceptable and if they are not acted upon it is because they are for good reasons unpractical. On the other hand, the editor feels that he could give a few words of advice that would enable the reader to derive more benefit from his favorite magazine. I have always been a very indefatigable reader of the literature of photography and as I still retain a very vivid recollection of my first efforts to acquire a working knowledge of photography from the, at that time, limited available literature of the craft, a few suggestions may not be out of place.

To begin with, do not neglect the articles that seem at the time to be too far advanced for your comprehension. Much of the information which such an article contains will be of no direct value at the moment but all unconsciously you will be absorbing valuable information that will piece in with other like material and as you come up to the subject later you will find that you have a good working knowledge of the plan or process. Even if the article covers a process which you never have occasion to use, the information gained concerning it will be of value, one photographic process dovetailing into another so closely. Describing an early experience of my own will perhaps convey a better idea of my meaning. A very technical article on lens construction was carefully studied through, despite the fact that it was mostly Greek to me at the time. A little later another article was encountered that attempted to explain the location of the nodes of emission and their importance in calculations to determine the conjugate focus. This in turn was but little more clear than



MEADOW BROOK (Pinhole.)

C. F. CLARKE.

the former but coming a short time afterwards upon an article dealing with the proper laying out of a focussing scale I found that in the light of my former reading this last article was all quite clear to me while several of my more experienced photographic friends could not understand the article, finding fault with the too technical treatment of the subject. In addition to this, this last cleared up much that was not understandable in the two previous articles and in that way I had quite a valuable store of knowledge concerning the construction of photographic lenses, knowledge that made further reading on the subject very instructive and interesting.

Keep all your magazines in handy shape ready for reference at any time. At the end of the year if you find that one or two issues are missing, write the publisher and ask to have them replaced. As a rule he will be only too glad to do this for a subscriber who so evidently values a complete file. Do not delay this too long as back numbers go out of print in a few months, as a rule. It is not necessary to go to the expense of binding them. For a few cents you can buy a simple belt punch that cuts a round hole. Make a pattern out of a piece of cardboard and mark each number so that all the holes will come in the same place. A piece of tape will then be all that is required to tie them into a compact volume. Do not depend upon the yearly index as many of the hints that are most valuable to you will be hidden away in articles with a caption that does not suggest any too strongly the information you may want. This can hardly be avoided. When you run across a formula, method or detail that you think will prove of interest at some future time, jot down the page and year of the magazine, when you first read the article. As these memorandums grow in number it will be a good plan to transfer them permanently to the pages of a small blank book or to a set of small cards. Do this only after you have secured a number of such memoranda as you will then be the better able to decide upon a classification best suited to your individual wants. If this is not done you will find yourself wondering from time to time where it was that you saw an article covering some particular subject that you are at the moment interested in quite deeply. Do not try to make this index too complete. I know a friend who tried to index



PORTRAIT.

R. DÜHRKOOP.

everything that his favorite magazine contained. The work itself became a great burden and the difficulty of using such a bulky index prevented his making any practical use of it, after all his work.

Investigate every new advertisement as it appears. Write the advertisers for their catalogues and circulars. You will be greatly surprised at the beauty of many of them and at the fund of information that they contain. In no other line is the advertising matter so directly instructive as in photography. And in writing for these things, do not neglect to mention where you saw the announcement. Your so doing will be a wonderful help to the magazine whose editor is trying to convince the advertiser that his advertisements will secure the attention of a few readers each month. Furthermore, do not forget that the advertised article is pretty sure to be better value than the one that is not so brought to your attention. A poor article cannot be advertised to advantage. Advertising pays only when it is backed up by the right goods. A firm may advertise to send a sample of their paper for twenty-five cents. It is a safe calculation that every enquiry received will cost in advertising bills much nearer a dollar than it will the twenty-five cents. What the advertiser expects to gain on is your future trade. He will have to have your second or third order before he is square with his expenditure. He would not be able to make a profit on this advertising unless he was quite sure that he had an article of better value than the one you might be using.

When you read an article in the magazine that does not come up to your expectations, do not condemn the editor and say that there is a much better way of doing that particular thing or a more simple plan of securing the same results, as the case may be. Remember that the editor can publish only what is submitted. If you have a better formula, method or process, write a description of it and send it to him. Do not bother about the literary merit of the article. Simply explain that you did not have the time and ask him to go over it before sending it to the printer. If you are afraid he may change the story too much, request that he send you a printer's proof before publishing it. This he will gladly do if asked. Even if you do not feel that your method of working some par-



THE COURTESY.

ALICE BOUGHTON.

ticular photographic process is entirely new or unique, if you have learned to go through with the work conveniently and with success, write a description of your method and send it in. What the editor wants is a brief description suitable for a short note or else an article covering the matter completely and in detail, using about two thousand words. You can easily tell how many words your writing averages to the page by counting the words in a couple of lines and multiplying the average by the lines on a sheet. Do not start out with a long preamble but get right into the subject. Explanations and the like will come in better at the end. And above all, do not make the process or method you describe appear difficult or hard. It will frighten off the reader before he gets interested. Make it appear as simple as it really is and mention possible causes of failure as such, not as dangers to be overcome.

Avail yourself of the editor's oft repeated offer to give advice on photographic subjects. He is a fairly modest man and rarely claims to know it all, but he has the advantage of being able to find out what you may want to know. He knows a man here that is expert in this line and a man there that is expert in another. Besides this, he may have helped another correspondent over the same difficulty as your own but a short time before and have at hand a full report on the subject. When you do write to the editor to ask his help, make it clear just what you desire. I have in mind a correspondent who wrote to me recently saying that his prints were covered with small spots and he wanted to know how they could be prevented. He did not mention the printing process he was using and so small a detail as the size, shape or color of the spots was utterly ignored. When you send in prints for criticism, send only two or three at a time and say whether you want them criticized from a technical or an artistic standpoint. It does not make the editor feel very kindly towards you to receive a reply saying you only wanted to know if the tone was a good one for Solio prints after he has spent the best part of an hour telling you where the prints failed in being artistic productions.

Tell your photographic friends what a good magazine it is. Send the editor a card from time to time with the names and

addresses of possible subscribers thereon. There are thousands who are not subscribers because they have never seen the magazine. When your subscription expires, renew it promptly and add a few words of praise if you feel that they are due. Make a few suggestions if you think advisable. A very good friend of the writer's takes some five or six photographic magazines. A subscription agency offered to save him about two dollars on the lot. He would not accept their offer. He said it was worth the difference to write each of the magazines, renew his subscription and send his best wishes. Besides that, he knew the magazine got the full subscription price instead of a portion going to someone who had no part in giving the magazine its value.




LUCERNE.

DR. C. GEO. BULL.

PRINTING GASLIGHT PAPERS WITH MAGNESIUM RIBBON.

By WM. H. ZERBE.

HE editor has asked me to contribute something for the ANNUAL that might interest its readers. Writing for publication being out of my line, I was about to send my regrets, when it occurred to me that a little dodge which recently served me so well, if I passed it along for the readers of the ANNUAL, they might think it good enough to give it a trial.

A short while ago I had occasion to make a large number of prints on gaslight paper. The negative I was using took about fifty seconds to print by a Welsbach burner. With three hundred prints to make and with the time at my disposal, I saw that I would have to do something if I wanted to get the prints out on time. Daylight being out of the question, as I could not get away from business, I remembered the many purposes for which I had used magnesium ribbon, I thought why not try that. Accordingly an exposure was made using a piece of ribbon about three-quarters of an inch long. The result was a correct exposure in two seconds. Here was the solution to get out my prints in time, and I at once rigged up a temporary affair to print more handily. I have since fitted up a more substantial affair, which has given me perfect satisfaction, and I give it here for the benefit of those who may be placed in the position that I was in, or to use as I do now, for all my gaslight printing.

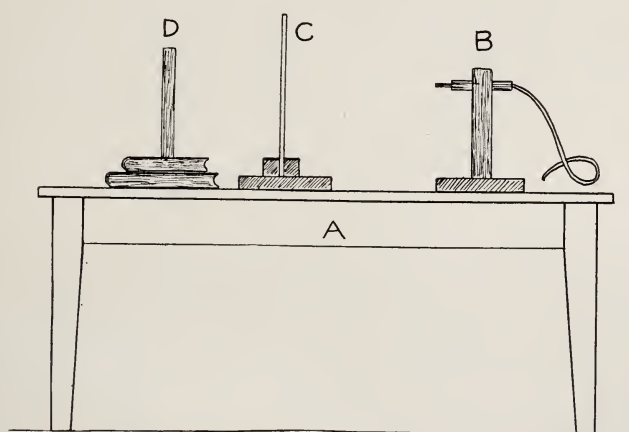
I will try to explain the apparatus by the aid of the sketch. The materials are all at hand in any household with perhaps the exception of a large enough piece of ground glass. A is an ordinary table, in the absence of which any board or shelf will do; B is a block of wood about eight inches square, thickness immaterial, with a stick about one inch square which is screwed to the board from the bottom (the height of this stick will depend on the size of printing frame used) near the top of this stick bore a hole to receive a metal tube. I find the



THE WOOD FAËRY.

W. & G. Parrish.

handle of a mucilage brush answers very well, cut off the brush part, and open the other end. C is also a board of a convenient thickness, and must be as wide as the piece of ground glass to be used. On this board nail two strips leaving a space or groove the thickness of the ground glass, this is simply a holder for the glass. D is the printing frame set on anything to bring it central with the ground glass and tube which holds the ribbon. The frame, ground glass and light must be central. The ground glass is used simply to diffuse the light, and lengthen the exposure, as the ribbon about a half inch long is apt to over expose a print from a thin nega-



tive, and I find that this amount is the shortest piece that can be conveniently used. I would suggest that a piece of ground-glass about twice the size of prints be used. I find that I get an even illumination on an 8 x 10 print by having the negative six inches away from the ground glass and the light about twelve inches away.

When ready to print I cut off three or four feet of the ribbon and run it through the tube, letting it come through as far as what has been determined to be the right length to give the correct exposure. I keep a lighted candle close by and when the printing frame with negative and paper is placed in position I use the candle to light the ribbon, which will burn only that portion that projects through the tube. After you have determined the amount of ribbon to be used you can repeat

these operations until all the exposures are made and can develop the prints at any time.

Magnesium can be bought from any dealer at about 75 cents a roll, the amount it contains I am not sure of, never having measured it, but there must be at least a thousand feet in it. I have had my roll several years, have used it considerably, and the end is not yet in sight.

To any of my readers who use a large quantity of gaslight paper I would recommend giving this method a trial, I feel confident they will always use it for they will find it will save time as well as gas bills.

I have found magnesium ribbon useful in many other ways, such as assisting in lighting portraits or interiors when window lighting is used, as well as making flower studies using it as the illuminant, but I will refrain from going into these now for I fear I have already gone beyond my allotted space.



AMSTERDAM.

HENRY E. COOPER.

NOTES ON RED SENSITIVE PLATES.

By MALCOLM DEAN MILLER, M.D.

PROBABLY many thoughtful photographers interested in orthochromatic photography have felt, as I do, the deficiencies of the common Ortho or Iso plates. In this country, the most widely used is doubtless the Cramer, a typical erythrosin-stained plate, with great sensitiveness in the yellow, yellow-green and orange bands of the spectrum. For many purposes these are most excellent, particularly when used with a deep-colored filter, such as the "Isochrom." The great trouble with them is their insensitiveness to all the dark shadow-colors of foliage in landscape-work, thus requiring prolonged exposure. If very fully, almost over-exposed, and developed in a very weak solution, the results will be good, though with a tendency to render the light greens too high in tone, in the print. Reduction with ammonium persulphate or ceric sulphate, to be sure, will partly correct the false scale of values, but I have found that the red-sensitive or panchromatic plates give better results and seldom require after treatment.

Such plates are the Cramer Trichromatic and Lumière's Panchromatic C.

In handling red-sensitive plates it is best to work as far as possible in darkness. This is practically necessary in loading holders, and advisable during development. If, however, light must be used, a very deep red light is permissible. A plate stained with Methyl Violet 6B, with one or two sheets of ruby glass, will give sufficient illumination, though the plates should be exposed to it as little as possible until fixed. It is safe to slip the plate into the tray, rock thoroughly to cover the surface and break air-bubbles; then cover the tray and do not hold the negative to the light until development is complete. This point is determined with advantage by the factorial system, hence we are led to the conclusion that tank-development is best, since the plate is perfectly protected from

all light throughout the process, the end point of which is known from previous experiments.

Red plates tend to be foggy, particularly as they have not such good keeping qualities as the common Isos, their average life being two or three months. On this account Glycin, which works clearest of all developers known to me, is to be preferred, and Glycin is the ideal tank developer. For tray development it should be combined with Metol to quicken its action. If the plates are loaded into the rack of the tank in darkness, removed in the dark and well washed, they will then stand considerable exposure to the safe light while being put into the fixing bath.

Red plates give better color values in landscape when used without a screen than do the ordinary Isos. The exposure in this case is shorter with the faster emulsions, owing to their greater sensitiveness to shadow colors. For full correction, a light yellow screen, requiring from four to eight times exposure, is all that is necessary, and the results are distinguished by softness and delicacy of tones and an accuracy of discrimination between slight steps in the scale of values unobtainable with other plates.



'TWIXT DAY AND NIGHT.

A. B. HARGETT.



BOY WITH BOOK.

J. EDWARD B. GREENE.



ATHOS, PORTHOS AND ARAMIS.

RUSSELL W. TAFT.

TITLES.

By RUSSELL W. TAFT.



O, my child, this article has nothing to do with the Knights of the Bath or of the Garter, nor with the Princes of Jerusalem. I refer, not to the Titles arrayed in Burke's Peerage nor the Almanach-de-Gotha, but to the titles to those of your prints that you deem worthy to call by name. Of course all pictures have some distinguishing appellation; probably eighty per cent. of our negatives are denominated rather for identification than otherwise—for instance, "Squinty—N. G.—looks sick," or "Duffelheimer's Brewery from tower Episcopal chapel"—but for the other twenty, which we may deem worthy of a place on the wall or in the portfolio, we must have something by way of title.

I assume that the self-respecting pictorialist needs no caution against the materialistic title. If a picture is not worthy of study introspectively, the fact that it is a view of "Orchard Street taken from a point seventeen feet east by north of the granite horse block in front of the residence of Hon. Henry Simpson" will not save it, regardless of the fact that such a title savors of the "this-cross-marks-the-spot-where-the-bloody-hatchet-was-found" school of art.

Passing by this class of titles we will find that there are but three requisites of an appropriate title, Consistency; Originality; Brevity.

Consistency.—Above all things be consistent. Bear in mind always the remark of some literary fellow that consistency is a jewel. And yet how many prints we see where the titles violate this rule. I recall one print of some boys in bathing entitled "Sea Urchins" where the glassy sea washed a bank of grass and the other shore was lost in some reeds about forty feet distant. In every picture there should be a motive (very high browed persons call it a *moteef*) a "guiding, controlling idea" as our friend Webster expresses it. Let your title, then, refer to it. If your print is a sandy beach and a distant head-

land in which plashing waves and nicely illuminated clouds give the predominating note of interest, is not "Sea and Sky," simply that, better than

"The breaking waves dashed high
On a stern and rock bound coast,"

when the waves are not of the high-dashing variety and the rock bound coast is a headland in the middle distance peacefully slumbering in the misty light of a September afternoon?



SEA AND SKY.

RUSSELL W. TAFT.

Originality.—Be original in the selection of titles. Why, after having seen "The Old Mill" 756,867 times any person should attach that moth-eaten and bald-headed title to a print of their own for the 756,868th is something with which my feeble intellectual powers are unable to grapple. If it *is* an old mill, as it sometimes is, and not a detached shed some distance from a trout brook, the picture will show it, and a more suitable title will add to the value of the print without being tautological. Then there is "Quietude," a stately old dame with a toupee and store teeth, who is neck and neck with the "Old Mill," while a little in the rear, obscured by a suitable amount of dust, comes "In the Gloaming," only about 438,243 times along. And we wonder why.



ENCHANTMENT.

Carle Semon.

Brevity.—If brevity is the soul of wit, be as witty as you can. Do not select a title that reminds one of the Orphic sayings of the Poet in "Iole." "Thank you," he said thickly; "thank you for your thought. Thought is but a trifle to bestow—a little thing in itself. But it is the little things that are the most important—the smaller the thing the more vital its importance, until the thing becomes so small that it isn't anything at all, and then the value of nothing becomes so enormous that it is past all computation." The chronic disseminator of caloricised ether had best leave the titling of his prints to someone else. Sometimes an appropriate quotation from some well known poem will serve acceptably, but the cases are few and far between where the quotation will not overbalance the print.

Choose a title consistent, original and brief. It may save a passable print, but a title inconsistent, hackneyed and verbose is far more apt to mar an excellent piece of work. And if you would learn a little on the subject of titles it might be well to run through the pages of any *American Annual* or *Photographs of the Year* applying to the prints the three tests suggested. Try it. Like homoeopathic medicine, it may do you no good, but it will certainly do no harm.



ON THE SMOKY CHICAGO.

DR. W. F. ZIERATH.

IN QUEST OF SNOW.

By HARRY S. HOOD.



ONE Sunday morning when the good people of Philadelphia awoke, their eyes were met with a scene which might have been taken from Fairyland, so pretty and delicate was it. Everything in sight was covered with a white mantle of snow and the delicate, flaky crystals of which the poets write, were still falling with unabated vigor. It was on this morning that the writer and one of his cronies determined to go out to view the beauties of the famous and historical Wissahickon Creek as it appeared during the progress of a snow storm. The snow was nearly a foot deep and still coming down in such quantities that one was led to suppose that the supply was limitless. It was a beautiful day, from the point of view of the photographer who attempts to portray nature in her various moods.

Upon arriving at our destination, we were astonished by a display such as we had never before beheld. The snow formed a smooth white covering, unbroken by the footsteps of any living thing. Here was solitude indeed! Nature never seems so grand, so awe inspiring, as when viewed alone, away from the noise and bustle of the cities, with no one near except, perhaps, a boon companion who can silently appreciate the wonders of Nature as they are presented for our delectation, alas too often unheeded by the busy worker, intent only on securing the largest possible bank account in the shortest possible space of time.

As we stood in silent contemplation of the snow covered trees, it almost seemed that we could hear the flakes rustle as they tumbled and jostled each other in the merry race for the ground, to such a degree were all other sounds absent. It was a cause for much regret that we had not brought a camera along because of the falling snow. A more perfect representation of Fairyland could hardly be imagined and we straightway resolved to repeat the trip early the next morning, this time including a camera in the party.



ALMOST SNOW-BOUND.

HARRY S. HOOD.

The remainder of the day was spent in tramping through the lovely valley of the Wissahickon, and when we finally dragged our weary feet back to the hurly-burly of the city, it was with great reluctance to leave the scene of so much enjoyment.

Early the next morning, the sun rose bright and clear and getting up betimes, we were soon headed for the haunts of the little gray squirrels, now tucked comfortably away in their winter abodes. This time we did not forget to take along a camera and a dozen plates. The camera was an eight by ten view camera and the exertion necessary to carry it from the trolley to the Creek strongly resembled work; but when we reached the scene of operations we felt amply repaid for all of our trouble. The sight that burst into view as we rounded the last bend in the road, was one that will always linger with us. The thought occurred to us that it was strange that we were the only ones who thought it worth while to come out and see Nature in one of her most attractive garbs. The deep blue sky, together with the snow covered evergreen trees formed a picture that an artist would have loved to paint. What a pity it is that photography does not yet permit us to invest our pictures with their true coloring.

First we stood on a bridge and took a picture looking up the stream. The photograph that we got is very far from accurately portraying the great beauty of the scene. To say that it was magnificent would be to put it very mildly. Tearing ourselves regretfully away because there were other fields to conquer and time was fleeting, we walked south along the banks of the stream. So many pictorial possibilities presented themselves to our view, that we were at a loss to select the best ones and I fear that we let some of the finest go by while we passed on, unwilling to expose our plates because we feared that when they were all gone we would see better things. One dozen plates would, under ordinary circumstances, last for eight or nine expeditions, but such was the wealth of material, that we could have made many more exposures.

When noon approached so near that the inner man began to clamor for his share of refreshment, liquid and solid, the sleighs began to appear on the drive on the opposite side of the Creek, and it was then that we secured the views showing

the sleigh tracks in the snow. Earlier in the morning, at about ten o'clock we had noticed several tracks in the snow, made by dogs. This would seem to indicate that the canine nature is susceptible in a greater degree to the beauties of this world of ours, than the human nature, superior as we egotistically style ourselves. I will not, however, insist on this point, as it is possible that the dogs were returning from a very late



WISSAHICKON DRIVE, PHILADELPHIA.

HARRY S. HOOD.

call at the time. The latter is hardly likely, as dogs, at least as far as my knowledge extends, keep very good hours, much better indeed than their masters.

When noon arrived it found us tired, hungry and in a very good humor because of the number of pictures we had been able to get. After we had eaten heartily, how heartily, the amateur who lays away his camera when cool weather comes, does not know, we betook ourselves to the darkroom and proceeded to develop our plates. They were double coated, orthochromatic and we used tank developer for them. When they were completed they showed the delicate shadows in

the snow; but much of the charm of the original scenes was lacking because of the absence of color. This is of course not so noticeable in a snow scene as it would be in almost any other kind of a picture; but it is a fault that we hope will be corrected in the near future. Several experiments are even now almost within striking distance of the great secret that so many have been and are striving to solve.

In conclusion let me say a word to the amateur who puts his camera away with his straw hat. Don't do it! Some of the prettiest of all views can be gotten on the day after a snow storm, and even if you spend half a day tramping through the snow without getting a single picture, the resulting improvement in your appetite and the invigorating air that will fill your lungs, giving your blood a probably much needed tonic, will more than compensate you for the trouble you take. Exercise is good for you and when you combine exercise with pleasure, there results a very healthy combination.



ON THE BANK OF THE RIVER.

DR. W. F. ZIERATH.

PARAMIDOPHENOL AS A TANK DEVELOPER.

By MILTON D. PUNNETT.

IN spite of the "just-as-goods" which have come and gone on the photographic stage, Pyro as a developer for negatives still holds the boards. Take it all in all its equal has not yet appeared. Yet it is not perfect and some of the "just-as-goods" have some good points which it has not.

Now that tank development has been found to yield negatives always equal to and generally better than tray development the staining qualities of pyro does not cut much figure as the hands need not come in contact with the developer. However, there are still some who would like to use some other developing agent, and for them I give the following formula for $3\frac{1}{2}$ inch tank powder:

Paramidophenol	25 grains.
Sodium Sulphite (dry).....	60 "
Sodium Carbonate (dry)	60 "
Water (65° F.).....	36 ounces.

Development 20 minutes.

The Paramidophenol should be dissolved first. If the sulphite and carbonate are mixed thoroughly, they dissolve quicker for the reason that the sulphite keeps the carbonate from caking. This is a clean working developer and in my experiments gave as clear, if not clearer, negatives with old films than pyro.

Using two powders and the same amount of water, will give you a solution which will develop in ten minutes (or a little less time if negatives of the same density as the twenty-minute development gives are desired.) More than one roll can be developed with one powder if care is used not to waste any of the solution. (This includes allowing the roll when taken from the tank to drain into the solution. To facilitate draining, hold the roll at an angle and it will drain practically free in about fifteen seconds.)

I have developed successfully three rolls—six exposure film with one powder made as above. The first was developed twenty minutes, the second twenty-five minutes, and the last half an hour. At the finish the developer was not very much discolored and the negatives were a good blue black color.



A FREIGHTER.

F. C. BAKER.



ALONG THE CANAL.

(From a gum print.)

Fedora E. D. Brown.



AN ESSEX MARSH.

MARK W. THOMPSTONE.

AN UNDISCOVERED COUNTRY, AND THE ENGLISH HOLLAND.

By MARK W. THOMPSTONE.

IN the southeast of England, lies a country which even as late as the present century was called "An Undiscovered Country." Avoided by tourists and holiday makers as flat and uninteresting, it is only recently that the charms of Essex have been discovered by those who seek out the unfrequented paths away from the fashionable watering places, and beauties unsuspected have revealed themselves in this hitherto flat and uninteresting country.

Beyond that portion made famous by Constable and the district haunted by the Complete Angler, very little was known except by the few, principally artists and photographers; so a short account of a ramble to one or two places along this coast may be of interest to readers of the *American Annual of Photography*.

A glance at the map of Essex shows it as a country broken and indented by numerous creeks and estuaries, tidal waters,

and marshes of the Colne, Blackwater and Crouch. On the estuary of the Blackwater lies the small but populous and picturesquely situated town of Maldon.

Maldon is divided into two parts by the River Blackwater. East Maldon, situated to the north of the river, is lower than West Maldon, which stands on the south bank on a steep eminence. If approached by water it presents a striking aspect with its quays and shipping standing out against a background of old-fashioned red-tiled houses, interspersed here and there by tower or spire. Delightful views may be had of the sur-



MALDON FROM THE RIVER.

MARK W. THOMPSTONE.

rounding country, across the estuary and towards the sea. The town itself is also full of interest with its quaint corners and narrow alleys, which remind you of Whitby. One of its attractive features is the Moot Hall, dating back to the Tudor period, with an over-hanging clock, and a portico over the footway, supported by four stone pillars; its grey and worn exterior gives no clue to its age, and it is only when you enter and view the fine old pannelled council chamber, the Newel staircase, with a hand-rail of moulded brick, that you realize you have here an example of the early fifteenth century. From the leaden roof extensive views may be enjoyed of the surrounding scenery.

All Saints, the Parish Church of Maldon, has many fine examples of Early English, decorated, and perpendicular work, but its chief feature is the singular triangular tower. St. Mary's, founded during the Norman era, is principally of the fifteenth century. In an old building, until lately used as a schoolhouse, close to the old tower of St. Peter's Church, is housed the famous library of some 7,000 volumes, collected and presented to the town by Dr. Thomas Plume, Archdeacon of Rochester, born at Maldon in 1630; he was also the founder of the Plumian Professorship of Astronomy at Cambridge University. He died in 1704, and lies in Longfield Church, Kent.

A short walk through the fields, along the side of the Chelmer, which, just below the Abbey, forms a foaming waterfall crossed by a flat wooden bridge, brings us to Beeleigh. The Abbey of to-day is little altered so far as outward appearances go to what it was at the time of the Dissolution, for, unlike the majority, it was allowed to stand instead of being pulled down and a modern building built in its place. The result is a delightful jumble of different styles of architecture, early English windows and doors, Elizabethan brickwork, timbered gables, and chimneys in clusters, inside groined roofs and Tudor fireplaces.

Close to the Abbey were the old mill and fishponds of the monks. A little to one side, near the floodgates, is a pretty thicket, crossed by trickling streamlets, where is situated the Lion Elm, so called from the curious formation of one side of the trunk, which resembles a lion's head. Beeleigh is the angler's paradise, for all manner of fishing can be had in the waters of the Chelmer and Blackwater, and in the Chelmer Navigation Canal, which joins the two rivers above Beeleigh.

Leaving Maldon we join the main line at Colchester. This old town, whose history goes back 2,000 years, when, as the Roman town of Camerlodunum, it became their chief settlement in Britain, is now noted as the busiest agricultural centre of Essex, and one of the principal garrison stations of England. The origin of its name is unknown, but is supposed to mean the "town of Camulos," a Gaulish deity probably worshipped both by Britons and Romans; it was also the capital of Cunobelin, celebrated by Shakespeare in his play of "Cymbeline."

The chief feature of the town is the almost perfect condition of its ancient walls, for while the old buildings and narrow streets have given way before the requirements of commercial progress only a few old houses here and there, with a few carefully preserved inns, remain to remind us of its ancient origin.

One of the most interesting of the old Roman relics is the Balkan gate, situated on the top of the Balkan Hill, and with one exception is said to be the only Roman gateway left in England.

Leaving Colchester and crossing over into Suffolk we reach the little seaside resort of Southwold situated close to the



ST. EDMUND'S, SOUTHWOLD.

MARK W. THOMPSTONE.

mouth of the river Blyth. Its history dates back to the year 1490 and its fine church of St. Edmund even earlier.

To the north of the town, on the way to Lowestoft, is the small fishing village of Covehithe, famous as the birthplace of that sturdiest of reformers, and most mordant of controversialists, Bishop Hale (1495.) Here also is a fine old church, whose ivy-clad ruins bear silent witness to the former wealth and populousness of a place which now ranks amongst the poorest and meanest parishes in the country (Illustrated). All the ancient parts of this once-stately pile are crumbling

into decay, but Divine Service is still carried on in a small building, built within the nave of the older church about 1672. The great arch of the east window still attests its former beauty, and the tower acts as a good landmark for travellers.

"All roofless now the stately pile,
And rent the arches tall,
Thro' which, with bright departing smile,
The western sunbeams fall.

Tradition's voice forgets to tell
Whose ashes sleep below,
And fancy here unchecked may dwell
And bid the story flow.

A. Strickland.

Five miles to the west of Southwold lies the little village of Blythburgh, situated on the River Blyth, noted for the ruins



COVEHITHE CHURCH.

MARK W. THOMPSTONE.

of the old Priory of the Augustinians, and its beautiful church of the Holy Trinity.

Nearer the sea, on the road between Southwold and Dunwich, lies the little village of Walberswick. If Cromer is entitled to be called Poppyland, then Walberswick may fairly claim to be considered Artists' land, for this little village, with its quaint old houses, bridges, and ferry and its fine old ruined church is considered the most picturesque village on the Suffolk coast. It is the resort of countless numbers of artists, who love to depict its beauties with brush and pencil. (Illustrated).

Its resemblance to Holland is so great that it has been called "the English Holland." Spacious green distances under bright, silvery Van der Velde-like skies, cattle feeding that Paul Potter might have sketched, dykes and waterways and high wooden little bridges, red roofs shining in the sun, backed by trees and topped by grey church towers, and over all there is sunshine and the flavour of the sea." The likeness is so great that the country might have been laid out and composed by Dutch painters.

Leaving Walberswick, and following the coast line, we might easily fancy ourselves in Holland, with its dykes to protect the lands against the inroads of the sea, its quaint windmills, and the watery pastures all reminding us of that country. A short walk brings us to all that remains of the once powerful city of Dunwich—a few scattered cottages along a sea-washed cliff, and the crumbling ruins of a church.

It was a port of some importance during the Saxon era, and Felix, the Burgundian monk, chose it for the establishment of the See of East Anglia in 632.

Space forbids me to describe any further the beauties of this part of England, but should this short account induce any of by brother photographers to visit these spots I feel certain they will not be disappointed for want of subjects for their camera.



WALBERSWICK.

MARK W. THOMPSTONE.

QUICK DRYING OF NEGATIVES.

By ERNEST A. TURNER.

WHEN we speak of drying a plate or film negative, we refer to the removal of the water absorbed by the gelatine coating or coatings (in the case of non-curling film.) For simplicity, let us consider first only a dry plate negative. We shall then have simply a sheet of glass coated on one side with the gelatine emulsion "film coating." The sheet of glass deserves no particular consideration. It serves simply to support the "film coating." The glass is entirely impermeable to the solutions and washwaters, it does not absorb and does not become "wet" in the true sense. Of course some drops of water will adhere to a glass plate when it is immersed in water, but this water does not penetrate even to a ten-thousandth part of an inch. This is easily proven by wiping and rubbing the plate with a clean soft linen cloth. The water on the surface of the glass is entirely absorbed by the linen and the surface of the glass becomes dry immediately without any time being necessary for evaporation to take place. The gelatine film coating is quite different. It absorbs water greedily. The film coating on an ordinary dry plate is one-thousandth of an inch thick,—but place the plate in water for half an hour or carry the plate through the usual processes of developing, fixing and washing and the film coating swells up to ten-thousandths of an inch. The gelatine has absorbed nine times its own volume of water and it is this water that must be again taken from the gelatine before the plate negative is dry.

Ordinarily we simply expose the plate to the air until the water in the gelatine has entirely evaporated. Now for the ways to hasten the drying.

The first is to remove the water from the film coating by immersing the negative in some liquid which has a stronger attraction for water than the gelatine has. Such a liquid is ordinary alcohol. Immerse a wet negative in alcohol for a few minutes and most of the water is taken up by the alcohol.

The film coating shrinks in thickness and when the negative is removed from the solution what liquid it contains is not simply water but a mixture of alcohol and water which evaporates much more readily than water. The drying is hastened first by there being less liquid to evaporate and second by that liquid being more vaporizable. The negative dries in a few minutes. It is not necessary to use ordinary or "grain" alcohol for this purpose. Denatured alcohol answers equally well and is much cheaper. A pint wide-mouth bottle of denatured alcohol will hasten the drying of a large number of negatives before it becomes too much diluted. It is used over and over and the wide-mouth bottle is suggested simply for the reason that it avoids the need of using a funnel when pouring the alcohol back from the tray to the bottle.

A second method of quick-drying involves the use of formaldehyde. Formaldehyde has a very strong tendency to "harden" gelatine and to make it insoluble. It is this same tendency that in alum produces that "puckery" feeling when a crystal of alum is applied to the tongue. The alum takes the water out of the tongue,—shrivels it. Alum does the same thing to gelatine, so does formaldehyde, only with formaldehyde the effect is many times stronger. When the wet negative is immersed for a few minutes in a five per cent. solution of formaldehyde the gelatine film coating gives up most of its water and shrinks or shrivels in thickness. At the same time, it becomes insoluble and capable of resisting heat. The negatives may now be removed and quickly dried in a moderate heat without fear of the film coating softening and running.

The same effect is produced in a less degree by alum. Chrome alum is a much more powerful hardener than ordinary alum. A negative which is fixed in the usual Chrome Alum Fixing and Hardening bath does not carry nearly as much water in the film coating, and may be dried by a moderate heat. This hardening, of course, overcomes all hot weather troubles since it enables the gelatine to stand the higher temperature of fixing bath and wash water without softening. The softening tendency of the developer is not so important since the negative only remains in the developer for a very few minutes.

The film conditions are exactly similar to those of the glass

plate. The film is simply coated on celluloid instead of glass and the celluloid, to all intents and purposes, resists wetting with water the same as a glass plate. Non-curling film, however, is coated on the back with Chrome Alum hardened gelatine so that there are two surfaces to dry instead of one. This does not affect the rapidity of drying, however, as each surface has its own exposure to the atmosphere.



EL CAPITAN,
YOSEMITE.

DR. C. GEO. BULL.

A CEMENT SINK.

By A. B. STEBBINS.



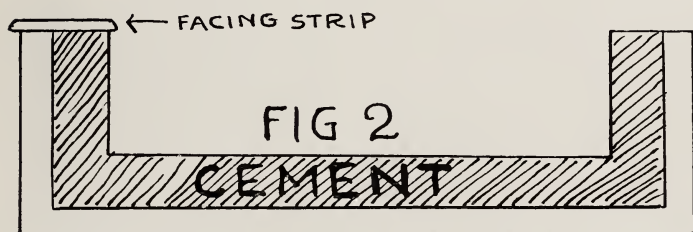
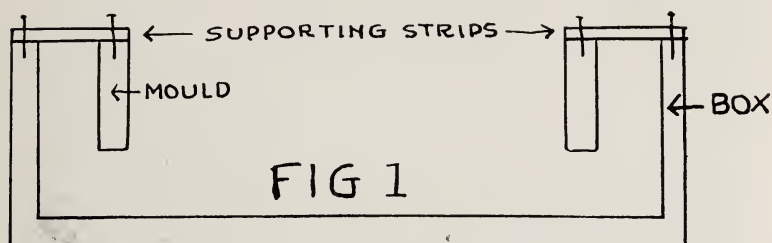
THE advantage of a cement sink for photographic use are absolute security against leakage, cleanliness, and cheapness. If you follow the directions you can make one that will be a luxury compared with the ordinary wooden sink, and at a trifling cost in labor and cash. The most important point is a good foundation, that is, a solid box so supported that there will be no settling or spring. Make your box four inches wider and two inches deeper than you want the inside dimensions of the sink, use good one inch lumber, (it can be cheap but should be sound; rough hemlock is all right,) have it well nailed together, put it in the place used and have the drain pipe well fitted at this stage.

I recommend that the cement bottom be two inches thick, so run the pipe through the box one and three-quarters of an inch so as to let the cement set around it, which it will hold tighter than if it were screwed in. See that it is fixed in the right place and stop it with a cork. It will be a good plan to put a union just below the sink if you are at all likely to want to disconnect it at any time.

The cross section, Fig. 1, shows the box ready to be filled. You will see that all the pattern or mould needed is a wooden frame four inches less in width, two inches less in height, (outside measurement) than your box. It is supported even with the top of the box by narrow strips tacked on so as to hold it in place equidistant from the sides and two inches from the bottom; these strips are indicated in Fig. 2.

Now get your mason and have him put in the cement. Tell him to handle it dryer than he would for cement walks as it will drip through some, (no need of any tight joints in the box.) Let it set from two to three hours when you can pull the mould away and it is ready for troweling. Now let it set over night and it will be ready for use in the morning.

Get the best Portland cement, and good clean sand. One half barrel of cement and three bushels of sand will make a sink 3 x 7 feet inside. I use three parts of sand, two parts cement. If you have any confidence in your mason let him decide these points. I have put two such sinks in my work-rooms; got things ready, had the mason fill the moulds between five and six p. m.; they were ready to trowel between nine and ten p. m. and were in use next morning.



To finish the sink put a facing of planed lumber around the top indicated in Fig. 2 and let it project one-fourth of an inch inside (this is to protect the edges.) I also use a planed piece of wood in the front of the box. A coat of paint gives it the finishing touch. If you think it necessary you can reinforce the sides, corners and bottom of the sink by putting big nails or spikes in the cement. Have these completely buried and they will not rust. Heavy wires can be run in through the bottom, but if you have a solid box, good cement and clean sand, these are not essential.

None of the chemicals used in ordinary work will effect such a sink except strong acids. It does not absorb and retain moisture or odors; developers do not stain it and it can

be scrubbed out as you would scrub a stone sink, and it grows harder and more permanent as the years go by.

The cost will depend on local conditions. Cement cost me \$1.75 per barrel, sand ten cents per bushel. One sink was put inside of an old wooden one, the box for the other I made out of picked up stuff. The mason will charge from fifty cents to a dollar for his work.

If you once build a cement sink you will find it superior to anything else you have used. Follow the directions given and if there are any points not clearly understood I will gladly help you out if addressed at Canisteo, N. Y.



THE WORKERS.

M. O. HAMMOND.



NOW, WHAT ARE YOU LOOKING
AT ME FOR!

MRS. W. W. PEARCE.

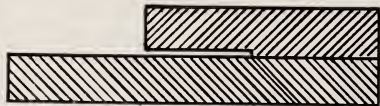
PERTAINING TO PASSEPARTOUT GUIDE.

By RICHARD TROTTER JEFFCOTT.



THE making of a passepartout is really a very simple matter. However, ideas relating to a special method employed in the work, may possibly be of advantage to the beginner.

Some years since having occasion to make a number of passepartouts, I cast about for some arrangement that might be used to determine the matter of putting on the binding evenly—that is, showing an equal margin when completed. Gauging with the eye, measuring with strips of cards, and the use of rubber bands were out of the question, for the reason that some method, to do the work accurately and practically mechanically could be found.



CROSS SECTION- ACTUAL SIZE. PASSEPARTOUT GUIDE

The sketch herewith presented (actual size showing cross section) wil give a concise idea of the article I had made. The idea was submitted to a wood worker, who furnished my first guide and as I am still using it, although made some eight or nine years since, I know the scheme is beyond experiment.

Two pieces of well seasoned cherry were selected twenty (20) inches long and one-quarter ($\frac{1}{4}$) inches thick. The bottom piece was two (2) inches wide and the top piece one and one-quarter ($1\frac{1}{4}$) inches wide. On the under side of the latter a slot was plowed five-eighths ($\frac{5}{8}$) of an inch wide and about one-thirty-second ($\frac{1}{32}$) in depth. The two pieces were now firmly glued and nailed as per the sketch. When complete the depth of the slot permitted the binding to project one-quarter inch ($\frac{1}{4}$) on the face.

We have now a guide that will give an equal margin of the binding on the glass provided care is used placing it in correct position and holding it there until the binding is withdrawn, at which time it adheres to the glass.

The usual process of mounting our print on mat or card, the placing of it, and the "back" (to which the hanging rings have been fastened) together with the glass in position. We are now ready for the actual binding of the passepartout.

To keep the several parts in position—glass, mat, and back—secure them with four wooden photo clips. Now take your guide and lay it along the edge of your work table, having previously measured off the required lengths of binding. Have within easy reach a saucer of water, some absorbent cotton, trimming knife and a pair of scissors.

The short sides of your glass should first be bound. Take your binding and insert it gummed side up in the slot of your guide. Press it back into the slot until the margin is even. Now with your damp cotton go over the gummed surface quickly, being careful to push the binding back to its former position, as it will probably move during the latter operation. Take your passepartout in both hands and place it on the binding seeing that the glass edge is up against the guide firmly. Give an even downward pressure with the finger on the back of the passepartout and directly over the binding, withdraw and you have the binding adhering to the glass, and equally distant from the edge.

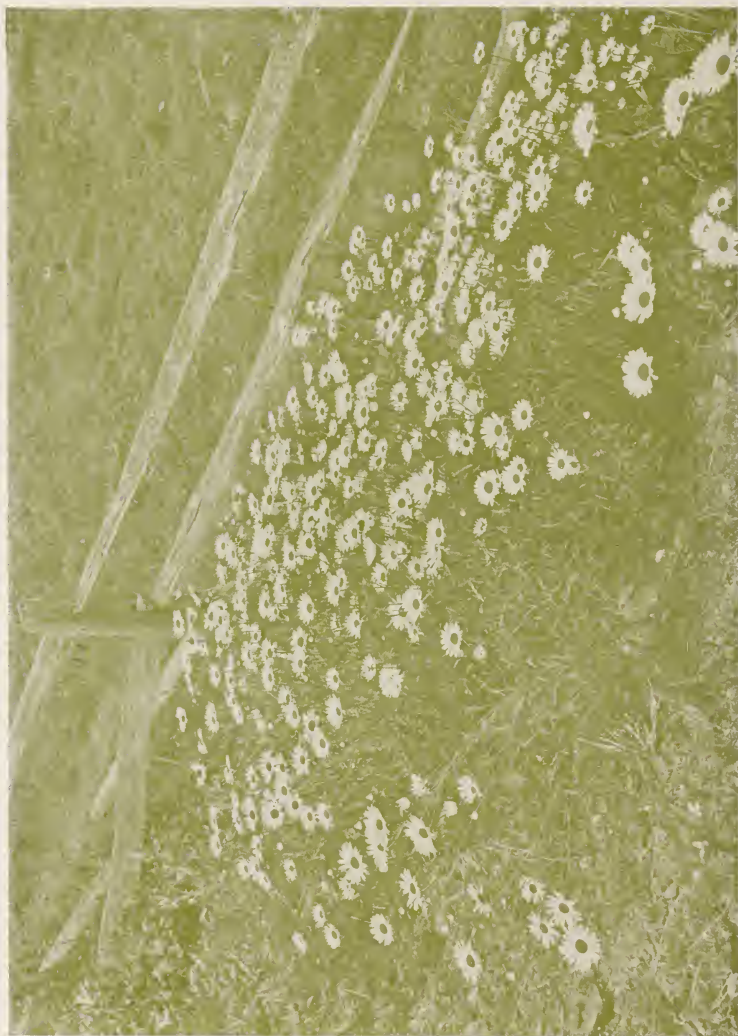
Trim off your excess binding, proceed with the other sides and your finished passepartout will show equal margins.

When it is desired to combine two colors of binding, for instance—silver-white and red-black—place your first binding on the glass alone and trim off along edge of glass. The second color being placed over the first can be readily gauged with the eye, and as an extremely narrow margin of the first color is generally desired no trouble will be experienced in procuring an even margin.



KITE ALIGHTING.

OLIVER G. PIKE, F. R. P. S.




JUST DAISIES.

Richard Trotter Jeffcott.

ON PORTRAITURE.

By CARL RAU.

O matter how much we may be attracted by other branches of photography, sooner or later a time will come when we shall wish to attempt portraits and what could possess more charm and fascination, than to be able to perpetuate the features and character of our fellow human beings? Camera workers hardly realize their opportunities and miss much that is of highest interest, charm and beauty.

The themes to be recorded are endless, each sitter possessing something peculiarly his own, something different from any one else, from depicting the innocence and trust of childhood, the hopeful and dreamy days of youth, through middle age along to life's evening and the pathos of old age. Here we have chapters from life's history in which we all have a part and which touch us all alike.

It is true many an amateur's effort and for that matter, many a professional's oftentimes also, is more than disappointing, often extremely ludicrous, if one's indignation can be mastered enough to see the "portrait" from the comical side. How many incongruities are dragged in, as to furniture and backgrounds, what a forced, look-pleasant expression of the features, what theatrical and often entirely foreign placements of the body, not to mention the many sins committed in the name of retouching, a slicking up to mere prettiness.

Then again we have the hopelessly undertimed indoor portrait of the beginner, the black and white outdoor snapshot in direct sunlight and the flat, over exposed ghostly image, with its many variations. No wonder that many so-called "amateurs" eventually stop this waste of material, seeing the error of their ways and wisely drop from the ranks, leaving but the comparatively few to continue to learn, to improve, to finally come out victorious, producing results which command recognition.

It is lucky for the former that he can place the blame on

lack of skylight, darkroom facilities, on the party who finishes the exposures for him, on poor lenses, cameras, etc., on anything but his own incompetency—and yet we know of workers in the front ranks, who get their results without skylights, who obtain the most beautiful and exquisite effects with the most inexpensive lenses and find all the work they can possibly accomplish. But they are the students, the real amateurs, the artists, the ones that have a genius for hard work and the patience to persevere.

In these days of plates of the utmost speed, a skylight can well be dispensed with, in fact its absence is often preferable. We do not usually meet our friends under skylight conditions, but under a great variety of light effects, both in and outdoors and the absence of skylight does away with many temptations, with much that is artificial, and has a tendency to produce originality and variety in light and shade.

Of course the camera worker must take hold of his work intelligently, make use of his brains and possess sufficient experience and technical knowledge to realize the limits and possibilities of his craft and such knowledge is apt to require years to acquire.

For indoor portraiture strong, glaring light effects and opaque intense shadows should be avoided. A diffused light gives pleasing results and the effect is heightened if the light is somewhat more decided from one direction. Reflectors for softening heavy shadows may be useful and at times necessary, but should be used with judgment and the utmost caution. The exposures should be sufficiently long to time the plate fully in the shadow portions of the face and the developer not too strong.

Very successful portraits have been secured outdoors and the rapidity of outdoor conditions is an advantage giving the sitter less opportunity to move and thus spoiling plates. Much care should be used to place the sitter in the most suitable light and, above all, front lighting must be entirely avoided. The light may come sideways or even from behind the sitter, so long as the sun will not shine into the lens. Backgrounds need be looked after carefully, many an otherwise good portrait has been about ruined by unsuitable background arrangements. Over exposure must be guarded against, since the diffusion

usually met outdoors inclines toward flat lighting without the help of over exposure.

We all understand of course, that skill in portraiture does not consist so much in catching a pleasing likeness only, a map of the features, as it were, from the most favorable view point, but rather to represent the spiritual aspect, the man or woman as they really are and to accomplish this end it is very necessary to understand character, to make your sitters feel entirely at ease and forgetful of camera. This knack may be natural to some, but most of us must acquire it by hard study and work, as it is not an easy matter by any means. Above all, be in sympathy with your sitters so that your work will possess this sympathetic quality.

By keeping high standards before us and learning by errors as we go along, we will soon be able to show some progress and finally results which people of good taste will admire and with a reputation for high class portrait work once established, there will always be plenty to do.



A PASTORAL.

REV. E. G. WATTS.

A WORD UPON POSING.

By CHARLES STILLMAN TAYLOR.



HERE are many photographers of skill who stoutly affirm that the art of posing cannot very well be taught; that this very desirable facility is not to be acquired, either with the aid of personal instruction or through the medium of printed text. That this viewpoint is altogether wrong, a little knowledge of the subject will quickly prove and as quickly banish the glamor of mystery which many amateurs associate with the skillful posing of the human figure. Despite the opinions of many able camera workers, who declare that posing is a matter of inborn good taste, or a gift, I shall endeavor to point out, that the pose is really nothing more than a method of expression, quite the same as writing or speaking and that, by observing certain fundamental forms, it is quite as possible to cultivate a knowledge of how to pose, as it is to become proficient with the pen, or to acquire a pleasant and expressive manner of speaking. At the beginning it may be well to remark that the object of a portrait is to first portray the likeness of the model, then to bring into being the characteristics of that individual, and lastly, to so arrange the figure within the picture plane, that the effect may be pleasing to the eye. This arrangement of the figure to fit a space is the mission of the pose, while the arrangement of the lines and masses of a figure, together with the distribution of light and shade, is known as composition. Thus you see a portrait should possess three elements: likeness to the original model, an agreeable arrangement of the figure within the picture space, and a harmonious distribution of light and shadow, which will bring out or emphasize the character, beauty or grace of the model.

In nature as in art, we find that the different forms of objects have a deep significance to us and that different forms bring different sensations to our minds. Nearly everyone can appreciate the greater beauty of an oval when compared to a

square, and see that a curved line is far more beautiful than a straight one. And this is so, because the curved line appeals more strongly to our imagination and by reason of its greater variety, the circular line creates in our mind a greater number of suggestions or ideas. As a curved line gives us the greater pleasure, so does a vertical line give us the idea of support or stability; a horizontal line the idea of repose; while lines drawn at an angle from the perpendicular, suggest life and action. This brings us to the expression of beauty in lines, and in his "Analysis of Beauty," a rare work published in the year 1752—the artist Hogarth speaks thus of a flowing line. "The serpentine line, by its waving and winding in different ways at the same time, leads the eye in a pleasing manner along the continuity of its variety, which line with the triangle, gives the most expressive of figures, signifying not only beauty and grace, but the whole order of form." This line is often called by painters, the "line of beauty." Raphael was an exponent of this serpentine line and in the reproduction of his Parnassus the grace and elegance of this line of beauty can be observed.

Much of the failure that comes to discourage the photographer who takes up portraiture in a serious way, is due to the ability which the camera has, of clearly delineating both the undesirable as well as the desirable feature of a view. This is one of the greatest obstacles the amateur portrait photographer has to overcome, and too much care cannot be taken to preserve the simplicity of a portrait; that the eye may not be attracted by an overabundance of unimportant detail, but that the interest may at once be drawn to the personality of the model itself. While in the majority of portraits, the center of expression is usually in the head or face, the other members of the body play a very important part also. The attitude of the body should be given due attention and not ignored as a means to express character and individuality. In every picture there can be but one object upon which our interest is centered and to this objective point all lines should lead, that the eye may not stray along a confused tangle of conflicting lines, but be rather led, without an effort, to the point of greatest interest. It is not at all necessary, as many seem so inclined to believe, to throw all but the principal object of interest out of

focus, but it is important to so subordinate the lesser details or accessories of the portrait, that they may not draw attention away from, and so conflict with the principal point of interest. A reasonable amount of detail is a necessary part of a portrait, for without some support the composition would be lacking in variety, and thus simplicity if carried to excess, will produce monotony and dullness, and so defeat our ends. Variety may be well considered as being one of the principal sources of beauty and, unless carried too far, it is a very important factor in photography, because by the introduction of several forms, lines or shadows, we give relief to the eye and so furnish entertainment for the mind.

Repetition is likewise an important aid, and by thus introducing repetition to oppose variety, we echo, as it were, the major chord. Yet in our desire for variety we must ever bear in mind, that a pleasant and well balanced composition cannot be had unless there is harmony between the several parts of a photograph, or in other words, we must have variety with unity. Alison in his essay on "Taste" speaks thus pertinently of harmony. "Beautiful forms must necessarily be composed both of uniformity and variety, and this union will be perfect when the proportion of variety does not encroach upon the beauty of unity."

This may be also said of uniformity and symmetry, which if carried to extremes, results in monotony and weariness. In our oval we find a good example of variety in unity, while the outline of a square expresses the opposite sensation, unity without variety.

Stability or support is yet another important element of the pose, expressing the idea of strength and rest. One of the most graceful as well as the most simple expression of support, is found in the forms of a triangle, where each line is found to support or balance that of another. This pyramidal form of design we find in many famous paintings and in portraiture. The pyramid or triangle form in its many variations and modification is of the greatest assistance to the photographer. If we have lines running in but one direction, the effect is noticeably weak and one sided, and to remedy this awkwardness, other lines running in an opposite direction are introduced for the sake of balancing.

As the photographer's chief aim is to decorate a space, the worker should keep in mind those essential underlying principles which have just been mentioned. In the composition of the figure, two methods are at the photographer's command. One method is known as the "decorative line," a form of arrangement which is very popular with many modern painters. This method wherein the line of decoration is both the beginning and the end of the composition, is seen in all its beauty in the works of the Japanese painters, and as a medium for the expression of the worker's individuality, the decorative design, has, perhaps, more scope for freedom of execution, through the more conventional forms of composition.

The other method of arrangement is the better known conventional composition and numberless examples may be seen in the many works of master painters of both the old and the modern schools of painting. In this method the figures are designed to conform with certain fixed principles and while many artists and art critics believe this order of design lacks the freedom of the decorative composition, this conventional design has long been regarded as the foundation of art. This order of form in figure composition is based upon the circular and the triangle line and their numerous variations and from the significance which these lines bear in the arrangement of objects, various art writers have divided these designs into circular and pyramidal compositions.

Circular composition is of value where several figures are grouped within the picture space and by its simplicity and pleasant sweep, a great deal of character is given to the composition. The circle with its variations, such as a circle within a rectangle, oval, ellipse, and so on, are not so widely used in photographic compositions as other forms. In outdoor portraiture the circular line is of great assistance in combining the landscape with that of the figure, thereby producing a union and balance of masses and shadows, upon which the pictorial effect of the group so largely depends.

The triangle or pyramid is especially adapted to the pose of a single figure and for this reason has been much used by the photographer. The pyramid is capable of many variations and may be lengthened or shortened at its base, or sides, inverted and changed in many ways.

The vertical figure in composition can be oftentimes made to express a great deal, but in amateur photography the successful handling of the vertical is not so often seen as other positions of the figure. The vertical line is unquestionably a very attractive line in the portrayal of art, and the greatest drawback to its successful representation is found in the spaces unoccupied by the figure. By a vertical is usually meant, a standing one, where the model occupies considerably more picture space than if the same figure was sitting or reclining. The greatest objection to this vertical line, is that the two oblong spaces upon either side of the subject, show an emptiness or blackness, not at all in unity with the figure. In the full length portraits of women this point is not so strongly marked, as the angular line of the skirt breaks into the regularity of this side space. But in the portraiture of men, the full length figure presents a much more difficult problem, as masculine apparel is not so well adapted for this purpose. To preserve the unity of the vertical figure, the empty side spaces must be broken of their regularity and if this is accomplished by letting the figure encroach upon these side spaces, the unity of the composition is complete.

But whatever form of composition is selected to express our idea of a pictorial photograph, the worker should by no means attempt to closely follow any contour of design, but by keeping fresh in memory those principles already given, should aim to so treat each figure in his composition, that beauty, grace, and character may be represented in the pose. The means employed should not be made too evident, but neither should too much care be devoted to its concealment, which unless very ably done, shows the trouble we have taken to "conceal the art for art's sake." While a multiplicity of directions might be given for posing the body, the head, the hands, and so on, yet it is evident that any set of rules can be of but little if any real benefit, for unless the worker understands the underlying principles of the subject, he can only follow blindly such methods of procedure, imitating the effect without knowing the cause. With this point of view in mind, I shall merely mention the important considerations of the subject and simply suggest to the reader, the points which should be kept in mind when an attempt is made to pose the model.



R. Duhrkoop.

Formality should never enter into the pose for if a formal pose is selected, the greatest bug-bear of the photographer,—stiffness— usually creeps in to rob the work of its greatest charm. It may be said that women are easier to pose than men, and this is true, not only because the feminine costume is better suited for artistic endeavor, but is also accounted for by the grace of the subject herself. It is a woman's inheritance to look dainty and beautiful, while in a man we naturally seek for character, strength and ruggedness. A nervous consciousness should be avoided at all times and for this reason it is a most excellent idea to interest the model in some of the many little things so natural to the subject, and which every day association so constantly recall to mind. The simple act of buttoning a glove, holding a fan, picking up the skirt, or arranging a vase of flowers, will add a motif and interest to a portrait, often unobtainable in any other way. The sudden suspension of motion which is so admirably seen in statues, is yet another means of obtaining animation in the model. An example of the effectiveness of arrested motion, is seen in the well known picture "A Daughter of Niobe," and which may be represented, photographic wise, by the model picking up a book whilst passing a table; pausing an instant as she greets an acquaintance; or perhaps it is nothing more than arranging a lock of straying hair. Reading, sewing and writing also lend aid in relaxing the body, that it may assume a graceful, easy and natural pose.

The arrangement of the hands in a portrait is often one of considerable difficulty and various methods are made use of to lessen conspicuousness of the hands. The principal reason for failure is due to the feminine subject who invariably complains that the hands appear unnaturally large. This dissatisfaction, arises, not because the hands are usually out of proportion with the head or other parts of the body, but is principally due to the artist, who previously to the introduction of photography, erred in drawing the hands and feet much smaller than the natural size. This error is a traditional one and while the camera has corrected much of the former exaggeration of the pencil and the brush, the hands are still the cause of much dissatisfaction. Unlike the painter, the photographer must, for the sake of focus, keep the hands in the

same plane as the head, and upon this account the camera worker is greatly cramped in working out his pictorial ideas. If one give an occupation for the hands, their natural disposal is assured, providing they are occupied in a manner which harmonizes with the subject, or motif of the photograph. The two hands should never be occupied separately, doing two things, because attention is drawn and confusion is created. When the hands are brought together care should be taken to avoid having their position form any noticeable figure or angle, which will conflict with the pose of the head or body. In some positions, the hands appear much larger than in others, and this is especially so when the broad back of the hand is seen, or when the hands are brought close together with the fingers interlocked, which under a broad lighting appear like one hand. A long wrist is often exaggerated in this manner, but may be easily remedied by a bracelet which breaks up this undesirable idea of length and breadth. The light should never fall too strongly upon the hands and seldom with the same intensity that illuminates the face or figure.

Expression in portraiture does not consist in forcing the features to assume an unnatural, intense expression. Many faces are very beautiful in repose, a few appear almost idiotic when a smile is attempted, and a very few indeed can be portrayed when laughing heartily. A smile if natural, is beautiful, but a made-to-order simper is far from attractive. Animation, is upon the other hand suitable for all subjects and fully deserves the closest attention of the camera worker. The attitude of the figure should be in perfect harmony with the face and the expression should be characteristic of the individual, while the scheme of light and shade should bind all together, and if this is intelligently done, the photograph should portray the desirable and agreeable characteristics of the sitter, which is indeed, all that portrait photography can be expected to accomplish.



ARTHUR HARTMANN.

R. DÜHRKOOP.

A SIMPLE PORTRAIT LAMP.

By A. W. WESTON.



THE professional photographer has many a good lamp at his disposal, but the amateur of modest means still looks for the ideal inexpensive light, which must be soft and powerful, yet cheap enough to be within the reach of all. Alas, it is only an ideal at present, for cheap lights even when strong enough, are generally insufficiently diffused.

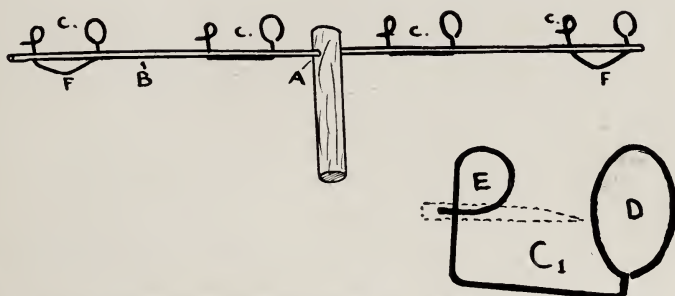
It appears to me that the best way in which we can diffuse the light without losing its strength, is by moving the actual source of light over a large area at the precise moment of its use. Flash powder would of course be too quick to allow of this unless several discharges were used and the most suitable method is to employ magnesium ribbon cut three or four lengths. These igniting simultaneously take three or four seconds to burn. I first pursued the idea with a kind of wand burning ribbon at one end, and the arrangement being long and easily worked, it allowed great control of lighting.

However, the arrangement of which I give a sketch, is more certain to give an evenly diffused light with even less trouble. The example which was taken with the same, illustrates the completeness of diffusion as no reflections whatever were used to aid it.

It appears rather a strange arrangement for a ribbon lamp, but its construction is as easy as it is cheap. Taking one bamboo cane about four feet long, some fairly thick wire, and a half of a broom stick, we proceed as follows: A hole is bored in the broom stick at A to receive the cane B, and eight small holes are bored in the cane to receive four wire holders, CCCC. Of course the pieces of wire are cut to the required length and threaded through the holes before being bent to the final shape of C.

Having bent the holders it is only necessary to fill the rings D with cotton wool and bind it over tightly with fine wire to form four spirit lamps, and then the pieces of ribbon being

tapered to a fine point and secured by the clips E. After saturating the cotton-wool with methylated spirit we have the lamp ready for use.

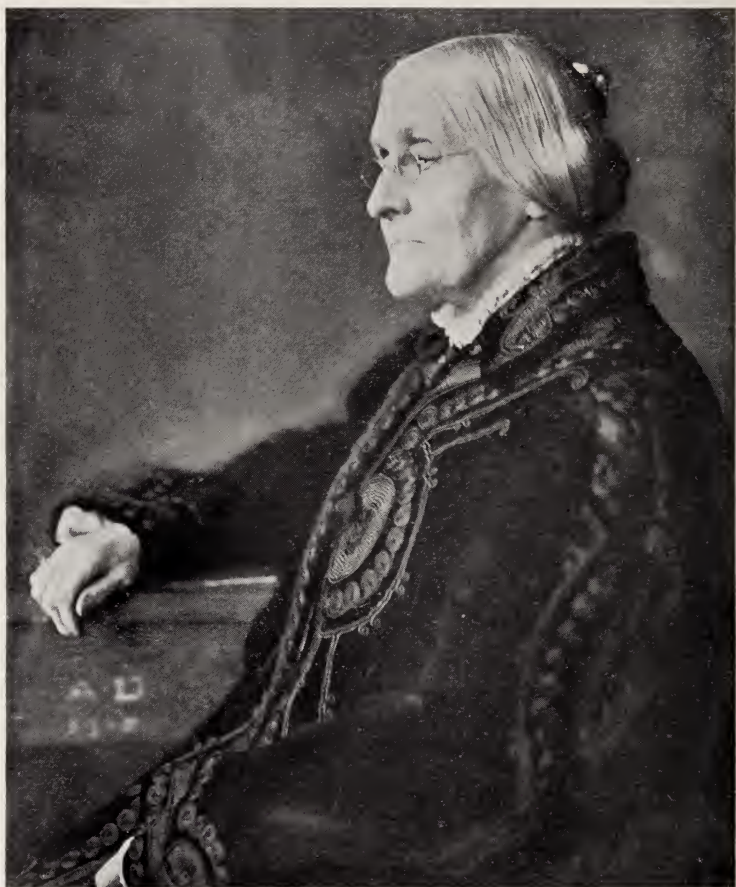


A. W. WESTON.

It will be apparent that so long as the cane is kept in a horizontal position as it would be when rested on two projections FF, the flame is safe from the magnesium ribbon. But to take the lamp up by its broom stick handle and then twist the cane to a vertical position, brings the flame directly underneath the fine points of the ribbon which catching directly give a fourfold light. We do not stop here, however, but continuing to revolve the handle, and perhaps moving it along at the same time, we diffuse the light

over a very considerable area, and so diffuse the four points of light that they become equal to the diffusion of daylight admitted by a window four feet square or even larger.

Such a lamp is easy to make, easy and cheap to use, easy for the sitter and excellent for results.



SUSAN B. ANTHONY (Last Portrait).

W. SHEWELL ELLIS.

A STANDARD OF EXCELLENCY.

By GEO. D. JOPSON.

WHAT profession is advancing with greater strides than that of the photographer? "For a' that" what standard has the photographer as a professional man? Should not there be some higher goal for the photographer to strive for than the making of pictures for so much per dozen? Should there not be some degree higher than the winning of a prize at a convention? Should not the learned and skilled photographer be placed on the same plane with the physician, lawyer or any other skilled professional man? Should not the photographer who possesses much skill and learning be placed in a position where he will be in the eyes of the public several degrees above the "quack" photographer? Do you ask how this is to be accomplished? Only in one way. By the photographer's passing an examination as to both the technical and practical parts of photography. He should have a thorough knowledge of his chemicals, instruments, and art of making pictures. This is a good subject for our national and state associations and for our leading photographic societies. We must include our amateur friends in this for among them are those to whom the professional photographer is much indebted and to whom such a degree should be given.

A clergyman may, by passing certain examinations, receive the degree of D.D., Ph.D., LL.D., etc. Should not a degree be created for the learned photographer as well? Should not he be a—— well! let us say Doctor of Photography—D. of Ph. From whence should he receive this degree? From some high institution of learning that will institute a department for such a course. What about the photographer who can not leave his business to attend such an institute but is desirous to obtain such a degree? Possibly some arrangement may be made whereby he can take his course by correspondence. Enough said. The wise can see and realize the idea and I trust the suggestion is a practical one to them.



THE POOL, BALLARAT GARDENS, VICTORIA, AUSTRALIA.

ERNEST A. BRAY.



THE RETURN OF THE PRODIGAL.

W. H. Porterfield.

OZOBROME.

By THOMAS MANLY.



OZOBROME is rapidly becoming popular in England and no wonder when its advantages over ordinary carbon printing are considered. The manipulation is straightforward and simple and now that nine months' experience has been gained in its employment by all sorts and conditions of workers, a very practical and scientific method of working has been evolved.

If the latest instructions are accurately carried out and the worker has only a faint idea of carbon printing, there is little chance of his going wrong even in his first attempt.

The object of Ozobrome is to make copies in carbon of a variety of colors either on the top of a bromide print or to transfer the carbon copy to a fresh support leaving the bromide print available for further copies. All results come out the right way round, that is, not reversed as to right and left as in the single transfer in the ordinary carbon printing.

The beauty and roundness of the Ozobrome picture leave nothing to be desired, and a dozen or more excellent carbon pictures can be produced from one bromide print without light of any kind.

It is, of course, impossible in an article limited in length to suit an annual to give very precise working details but the following description gives a very good idea of the manipulations.

Three porcelain dishes are placed alongside one another thus:

Dish A
Working
pigmenting
solution

Dish B
Half full
of
cold water

Dish C
Half full
of
cold water

Into A is poured the working pigmenting solution, that is,

the concentrated solution as sold plus four times its bulk of water.

Dishes B and C are half filled with cold water.

Place the bromide print (which should have previously been hardened with formal or alum and dried) face upwards, in the dish of water C and rub the surface with a soft sponge.

Now immerse the plaster (cut little larger than the bromide print) in the same dish C and rub the surface with the sponge, but be careful not to allow it to remain in the water for more than thirty or forty seconds.

Take the plaster from the dish C and after draining the superfluous solution from a corner, draw it face downwards wards, to dish A containing the working pigmenting bath and push it under the surface with a soft camel hair brush and then rock the dish to insure even soaking.

Allow the plaster to remain in dish A for one and a half to two minutes (the longer time for dense black bromide).

Now remove the soaked plaster and after draining off the superfluous solution from a corner, draw it face downwards along the surface of the water contained in dish B and in bringing it out, drag the gelatine film across the edge of the dish so as to remove any airbells.

Now transfer the soaked plaster to dish C where the bromide print is lying and very gently place it, film side downwards, upon the surface of the water, first touching the water with one edge only and then lowering the remainder of the plaster so as to drive forward any airbells, then take hold of the underlying bromide print and lift the two papers, clinging together out of the water and at once shift them into position and squeegee them together upon a sheet of plate glass.

After squeegeeing place the adhering papers upon blotting paper.

In fifteen to twenty minutes time either of the two following methods can be adopted. The adhering papers can be developed at once in warm water in which case the pigmented gelatine will adhere to the bromide print and produce a carbon picture on the top of a bleached bromide print, or the plaster can be separated from the bromide print and squeegeed on to another piece of paper, leaving the bleached bromide print available for further transfers.

In the latter case, which is called No. 2 or the transfer process, the result is a pure carbon picture on plain paper without any silver substratum and in my opinion is just as simple to carry out as method No. 1.

To carry out method No. 2 a piece of transfer paper is placed in dish C and the back and front rubbed with a sponge and left about one minute to soak. Now take the squeegeed print which was left upon blotting paper for fifteen or twenty minutes, and from which you want to make a transfer, and place it in the dish B and at once pull the plaster from the print under the surface of the water. Hold the plaster in your hand and leave the print in the water. Place the plaster upon the surface of the water in dish C, where the transfer paper is lying, in exactly the same manner as described in the operation of bringing the plaster in contact with the bromide print. Withdraw the two papers clinging together and squeegee them into close contact upon a sheet of plate glass.

The adhering papers are then placed between blotting paper and subjected to a moderate pressure such as the weight of a sheet of plate glass.

In about ten to fifteen minutes the papers will be ready for development which is carried out in a similar manner to carbon printing.

The bleached bromide print remaining in dish B should be washed for fifteen to twenty minutes previous to redevelopment with any bromide paper developer.

Although a description of the various operations takes a good many words to express, the entire process is exceedingly simple and everything goes on like clockwork after one or two trials.

Some stages of the manipulation may seem strange and unconventional to a beginner, who may possibly ask himself, "Why place the plaster in water before soaking in the pigmenting solution? It surely comes to the same thing as diluting the pigmenting solution." This is not so. The soaking in cold water expands the gelatine film and as long as the film does not get saturated, it will more evenly and more eagerly imbibe the saline solution than if it were in a dry condition—the saline solution will moreover replace a good

deal of the absorbed water. One great advantage of this method is that the plaster becomes fairly limp and is much more easily kept under the surface of the pigmenting bath.

Now why do we draw the plaster unpigmented with the pigmenting solution across the surface of cold water? The answer is: if we were to bring the gelatine film direct from the pigmenting bath, covered as it is with a superfluity of an active solution, into immediate contact with the bromide print, the superfluous solution would attack the image before we could press the gelatine film into perfect contact, resulting in a loss of detail in high lights and skies. The simplest way under the circumstances is to produce a kind of buffer between the two surfaces in the shape of a layer of water which permits us time to bring the film into close contact with the bromide image before any appreciable chemical action takes place.

It would therefore be advisable to squeegee the print and plaster together as soon as possible after they have been brought together in dish C.

Why do we rub all surfaces with a sponge? First of all a clean sponge removes all dust and dirt, which are deadly enemies in all photographic operations. Secondly, the friction causes more even absorption and removes invisible airbells which have a habit of sticking to plasters and transfer paper. When transferring to rough paper, the sponge is invaluable as if the paper is vigorously rubbed back and front under water it only requires one to two minutes soaking in cold water to prepare the surface for the reception of the improved plaster.




PREPARING FOR THE DAY'S WORK.

W. H. WALLACE.

TONED LANTERN SLIDES.

By ALFRED H. SAUNDERS.

AY, Father, why do you stick to such a dirty, messy process in making your slides? Why not give up the wet collodion, with all its baths and array of chemicals, and go in for dry plates? Then I might make some slides from my snap shots." Thus spoke my boy after seeing me fix up for a couple of dozen slides for a special lecture. My reply was, that wet collodion slides are easier to produce, give better quality, tone easier and are finished more quickly than dry plates. No maker with a reputation to keep, or make, will use dry plates if he knows the wet collodion process, especially for commercial purposes, and coloring, for which the neutral grey tone lends such an admirable foundation.

"Yes, but, cannot you color dry plate slides just as well?" "Not with oil colors, and the aniline dyes in my opinion spoil a good slide, so don't bother until I've finished this toning. There! see what you've done now, these slides are too reddish brown and I have to make them over again, so be off until I've finished."

"Now that you have those slides finished, can I ask my question?" "Yes, go ahead." "At the Board of Education lectures last season, two lecturers had various colored slides, blue for moonlight, pink for sunset, green for foliage, and some of them were brown. Can you tone your slides to give these various colors?"

"I could but it is too much trouble, and I prefer to see a good plain slide full of vigor and half tone, rather than these monotones." "Well how is it done?" "These tones may be obtained in various ways, by making carbon slides with various colored pigments. By tinted glass in the lantern. By soaking the finished slide in aniline dye until it acquires the necessary depth, and washing the sky out with water and brush. By the various developers combined with exposures of short or longer time and last by toning after the slide is completed."

"If you can spare the time, father, I would like to learn the last two methods." "Very well, then, first, I will take your moonlight pictures. After well fixing and washing the slide, (which should for preference be developed with a good hydrochinone formula), immerse it in a weak solution of ferrous sulphate, say ten to twelve grains to each ounce of water, for ten or fifteen minutes, (one or two experiments according to depth of color required, will soon prove the correct amount. I prefer twelve grains to the ounce of water). Wash well in running water for ten minutes and place in a bath of ferricyanide of potassium, ten grains to each ounce of water. A deep blue color will soon result, after which again wash for ten minutes, and dry. The color can be varied from pale to blue black, according to strength or weakness of the solutions.

For *green* tones, take:

No. 1.	
Uranium Nitrate	¼ oz.
Water	20 oz.
No. 2.	
Potassium ferricyanide	¼ oz.
Water	80 oz.
No. 3.	
Ferric Chloride	1 oz.
Water	10 oz.

Take equal parts of No. 1 and No. 2 and let the slide remain in until it is very dense. Wash for ten minutes and immerse in No. 3, one ounce to ten ounces water, until it assumes the color desired. The time varies from five to fifteen minutes. Wash well.

To clear the green sky, if this is at all prominent on the slide, while in its wet state, with a gilder's camel hair swab, or mop, go over it with a weak solution of cyanide of potassium, one-quarter ounce in ten ounces water, holding it under the faucet after each swab until it is clear. Well wash and dry. The sky can be made blue with the blue toner if desired.

Brown tones are obtained by overexposure in the camera, and a highly restrained developer; or

No. 1.	
Uranium Nitrate	20 grs.
Water	5 oz.
No. 2.	
Potassium ferricyanide.....	20 grs.
Water	2 oz.

Add No. 2 to No. 1, a dram at a time, until a very dark

brown tinge is obtained, immerse the slide and watch developments.

These are rapid, varying from a brick red, through dark chocolate brown, to a reddish yellow tinge. Operations can be stopped at any stage by quickly rinsing under the tap. Wash and dry."

"Thank you for those experiments. Now, what is the difference between a slide and a transparency?" "Practically none, for use in the stereopticon they are one and the same. Any positive on glass is a transparency. I have seen some pretty transparencies hanging in our friends' windows." "Are these made in the same manner as slides are?" "Yes, except that instead of reducing you make an enlarged slide. Exposure, development and tinting are all carried out by the same process, the only change made being that instead of binding up with a plain cover glass, a piece of ground glass is framed up with the transparency, for better effect."



E-WE-TONE-MY (Nez Percés).

HY. FAIR.




THE POSE.

Copyright, 1907, by J. Arthur H. Hatt.

PROCESS CAMERAS.

By J. ARTHUR H. HATT.

T is well known that process photographers have been severely handicapped for the want of a good camera, one which lends itself equally well for direct and indirect half-tone, and for two, three or four-color work. Especially is it necessary that the camera may be easily focussed to one hundredth of an inch, if desired. And this fine adjustment should be done with the turn of a screw, without having to spend from five to fifteen minutes in pushing the bulky camera itself to and fro. It is equally essential that the screen distance shall be easily regulated, and that the photographer can be sure that once regulated, the distance will remain exactly as he fixes it.

This feature of accuracy of adjustment is particularly necessary with the three-color half-tone photographer, who has to register his three negatives accurately whether the positives he has to work from are correctly in register or not.

Similarly, for direct work on dry plates, the utmost accuracy of adjustment between screen and plate is necessary, because the dry plate requires much less separation between screen and plate than the wet plate.

The front of the ideal process camera should be perfectly rigid, because a movable front cannot carry a heavy lens and prism and remain trustworthy, especially if these are adjusted to a cone. There should be a cone on such a camera: first, to supply the necessary angle of view, and secondly, to permit the change of color filters during the exposure of one plate. This is usually done by means of a dark slide in the cone.

It is almost twenty years since I began my tussle with the great American process camera and some others made by other nations. In the beginning, as I freely confess, I did not know just what I did want in the way of a camera, and was satisfied to do the best I could with the apparatus I had.

My first half-tone work was done with a kit made by the late Mr. Wolfe, of Dayton, Ohio. The kit was arranged to hold a screen on one side and a wet plate on the other. They were not easily adjusted to different spacing between screen and plate. Another drawback this kit had was that one had to use a plate the size of the kit every time. Fancy making a single column negative on a 14 x 17 wet plate. On the whole, however, the kit was reliable and would remain, as far as separation is concerned, just as it was fixed.

The next contrivance I used consisted of a kit to hold the half-tone screen in front of the wet plate carrier. This was an improvement on the Wolfe kit in that it permitted the use of a plate smaller or larger than the half-tone screen. In accuracy of adjustment it was not as good as the Wolfe arrangement, but on the whole, more reliable than those in use to-day.

About fourteen years ago I was the managing owner of the American Process Engraving Co., of Cincinnati, and had my first experience at that time with the adjustable holder. This utterly failed in its inability to keep the separation distance fixed as arranged in focusing. I therefore converted the camera for use in line work and took up a new French process camera made by Goring & Co. The screen adjustment of this camera was very accurate. The holder was made altogether out of machine finished iron. The screen was adjusted with a micrometer screw placed outside the camera, down at the bed. The drawbacks were its movable front and its great weight. It was only a 14 x 17 camera but it required two men to lift it. Another bad feature was the plate holder. This consisted of a nest of movable kits with glass corners. If the glass had a corner off it had to be discarded. This instrument was the first I worked with in which the screen was in the camera and not in the holder. For large plates this is a decided advantage. For small cameras from 14 x 17 down, I believe that most process men would prefer to have the screen in the holder, for many reasons.

The latest process cameras made in America seem to be more or less copies of the Penrose camera, and for that reason we can consider them all at once.

The Penrose type of camera has a movable front, which is a

disadvantage for any work requiring accurate register. It has a screw for moving the front used in accurate focusing, which works admirably for all work in which a turned negative is used, but for direct work, or reverse negative work, it is obviously of no use for focusing. This type of camera cannot be made accurate enough for screen adjustment without using dry plates for the production of half-tone negatives. The moving device to place the screen in position before the plate cannot be relied on to place the screen accurately in position after the device has become a little worn in use. I have known this defect to be apparent even in new cameras of this type.

The dial usually found on the outside of this camera is also lacking in perfection. It is very much like picking the teeth with a crowbar to get the accurate measure of a screen adjustment to one hundredth of an inch on one of these dials. It does not always follow that if you see it on the dial it is so. The process photographer who has to do good work must have accurate adjustment and must be able to measure actual screen distance itself with a gauge. Some of the cameras of this type have curtain slides, which makes it still troublesome to get at the real distance to measure it.

It has been my opinion for some time that most of our process cameras have been designed by persons having but a superficial knowledge of the process photographer's needs.

Some time ago I took the time and trouble to design a practical camera which would fulfill all the requirements. My suggestions were offered to the various camera manufacturers but it has taken me a whole year to interest one of the lot in these suggestions. At last the Century Camera Co. has agreed to build a process camera according to my specifications.

If they do this, I can promise that the process photographer will be able to save half an hour to one hour every day simply in the adjustment of the screen. He will have a camera with which he can focus accurately by means of a screw for either direct or indirect (turned or reversed) negatives, and when the screen is once adjusted, it will remain so even if taken out of the camera and replaced. This will be of great advantage to the newspaper worker who has little time for adjustment; when his screens are once set he can change them as often as he likes and they will always be right. This camera will have

a cone with a dark slide, which will enable the photographer to place his color filter between the lens and change it during exposure, making two or more exposures on one plate through various filters. This will be especially useful in making the black negative in four-color work.

I am also in hopes that the new camera will have a glass trough as the bottom plate carrier, which should keep the silver away from the rest of the camera to some extent.



RUINS OF CITY HALL.
San Francisco, April 18, 1906.

DR. C. GEO. BULL.



THE EVENING HOUR.

ARTHUR W. WALBURN

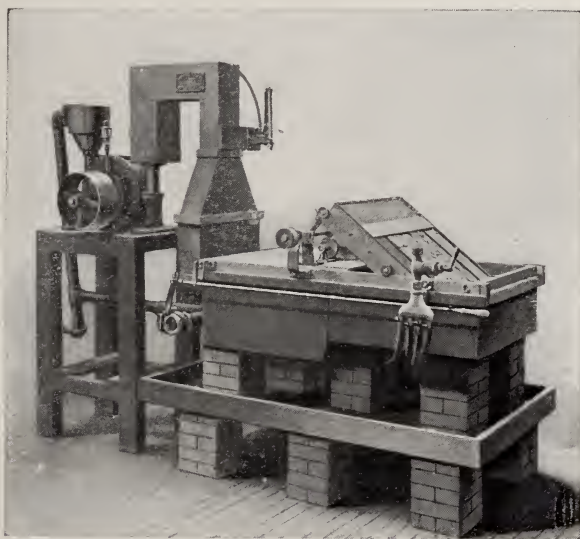
ETCHING BY MACHINE.

(COMMUNICATED.)



R. LOUIS E. LEVY is one of the earliest pioneers in the photo-engraving world, and is one of the most daring in the search for new ideas.

It is about ten years since he conceived the idea of etching plates by means of a spray of acid projected against the surface of the plate, and demonstrated its merits as a laboratory experiment, and it is now several years since the method was introduced in practice to test its commercial value, and to furnish experience for the development of the machine to a commercial basis.



THE LEVÝ ACID BLAST ETCHING MACHINE.

The difficulties encountered in producing an apparatus for the application of the spray method that would work satisfactorily, and stand the severe inroads of the acid when applied in

the form of a spray, were very great indeed, and one material and design, apparently durable, was replaced by another as it developed weakness in the course of time in practice.

In the meantime the general idea of superseding the old method of tub etching by something more in harmony with modern methods appealed generally to the sense of photo mechanical workers throughout the world. A number of other machines were developed and offered to the fraternity to accomplish this purpose, but only one of these has thus far put in an appearance on the American market. Others have appeared in Europe, and, while they have met with some favor at times, they were either not sufficiently durable or failed in some particular to perform satisfactorily. The principle originally applied by Mr. Louis E. Levy appears to be the one that gives the best results and in the shortest time, and the thorough manner in which this machine has been developed, and is now being manufactured, renders it perfectly durable and very satisfactory in every way. The machine has been in use in a number of newspaper offices for several years, and is at the present writing just being introduced into commercial establishments in Europe and America.

The apparatus is somewhat complicated and of rather expensive construction. It consists essentially of the following parts:

First. An acid compartment, supplied with jets for projecting the acid against the plate. This compartment is supplied with a series of aspirators arranged in rows, which tend to produce the equivalent of a series of continuous brushes of acid spray.

Second. A washing compartment, consisting of a tray furnished with a series of sprayers for washing the plate with water as it comes from the acid compartment; a plate holding cover, a portion of which is supplied with a device for oscillating the plate at right angles to the rows of aspirators.

Third. A blower for supplying the water to the aspirators and the force for projecting the acid spray.

The trays, forming the compartments mentioned, are composed of chemical stoneware, which is thoroughly acid-proof; the aspirators of porcelain, and the plate holding device of aluminum—the actuating mechanism being made of bronze.

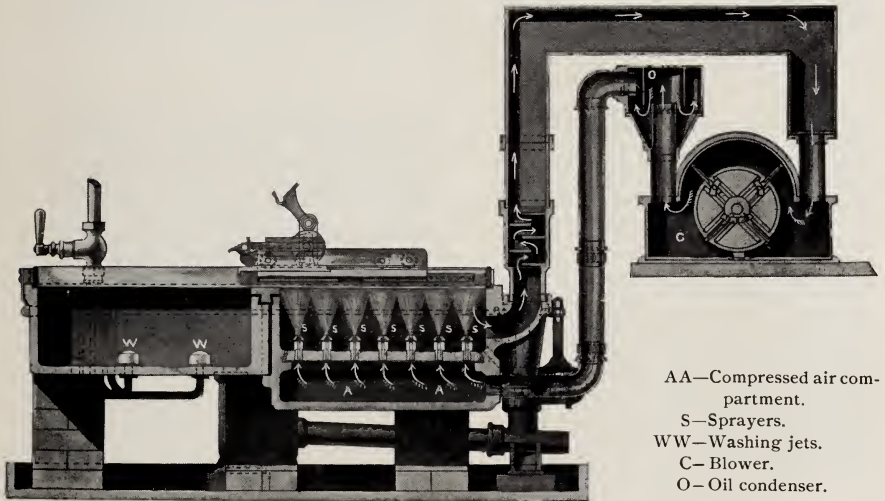


OLD HOUSES AT
WELLINGBORO, ENGLAND.

Hy. Erle Cooper.

The valve system, controlling the water supply, is so arranged that the pressure can be regulated at will by the operator, and the circulation of the water is so designed that, instead of the fumes being given out from the bath, a gentle current of fresh air is constantly drawn into the different compartments, and the excess of water not required is led by a pipe to the outer air. In operation, the plate is clamped to the plate carrier by an extremely simple and quick-acting device, and is moved into the

SECTIONAL VIEW OF THE LEVY ACID BLAST MACHINE FOR ETCHING.



The arrows show the circulation of the air.

acid compartment, where it is engaged in hook connected with the oscillating device, and the air pressure turned into the etching compartment.

The first bite on any job is completed in from thirty to sixty seconds; twenty seconds gives abundant depths for a 133 line half-tone, and sixty seconds for a coarse half-tone. The plate, after receiving the first etch, is removed from the etching to the washing compartment where it is sprayed with water and thoroughly cleansed. After powdering, it is given a second bite of usually about two minutes, and a third bite of from four to six minutes completes the etching to the usual depths.

One of the most interesting features of this apparatus is the quality of the resulting work. By its means half-tones can be etched on zinc, having the same character as the very finest that can be produced on copper. The accompanying prints are photographs enlarged fifty diameters from plates made from the same negative by means of the acid blast and in the usual way. The difference in character is so apparent as to require no comment. The results already obtained by this method of etching, and the economy effected thereby, indicate very clearly that the old method of etching by means of rocking a plate in a tub is destined to be entirely superseded by mechanical and more modern methods of procedure.

While the Etching Machine was undergoing development, Mr. Levy perfected a machine for powdering the plates and preparing them for the etching. This machine has been tested out for some years in several newspaper plants, and its performance, both as to quality and speed, amply confirms the conviction that the powdering of a plate is a mechanical process, which can be better done by mechanical means than by hand. This machine lays on the powder, brushes the plate, heats it and cools it, all automatically, and is a continuous operation, the time consumed for a plate 20 x 24, or two smaller plates, being but little over one minute for each powdering from the time the plate goes into the machine until it is ready for the next operation.

This machine is also undoubtedly destined to aid the etching machine in promoting the entire process of etching to a more modern basis.

Explanation of Plate on Opposite Page.

Figs. 1, 2 and 3 show the plate as etched in the tub in two bites occupying seventeen minutes.

Figs. 4, 5 and 6 show a plate from the same negative etched in the machine in one bite of sixty seconds.

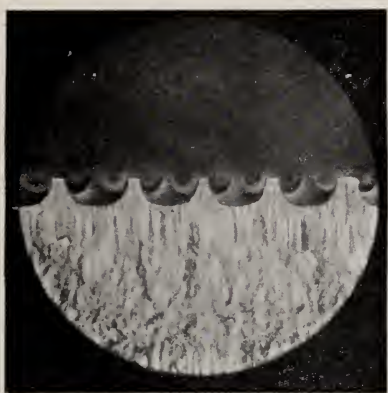


FIG. 1



FIG. 4

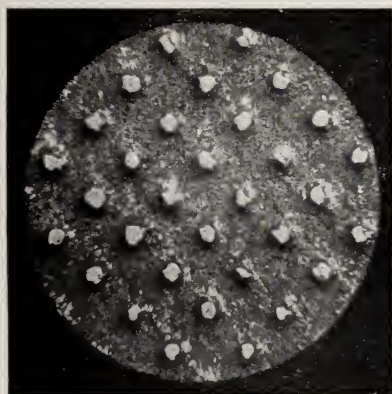


FIG. 2

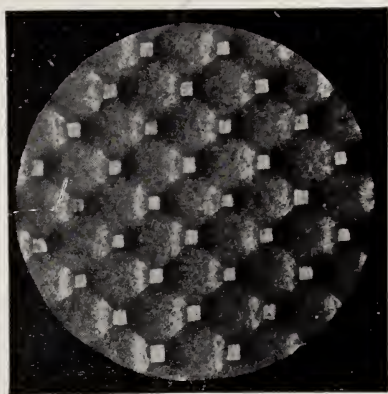


FIG. 5

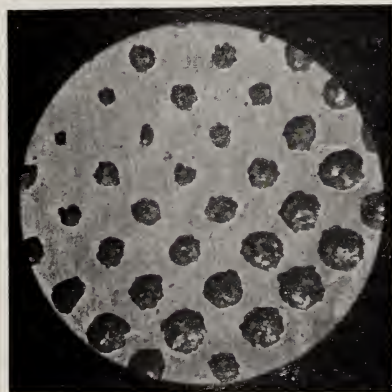


FIG. 3

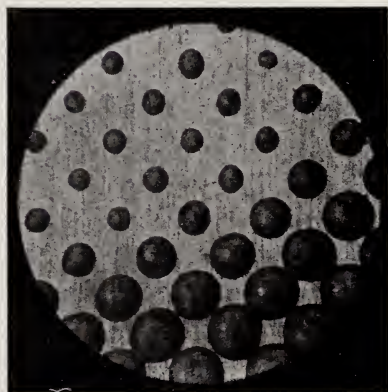



FIG. 6

MICRO-PHOTOGRAPHIC ENLARGEMENTS OF HALF-TONES ON ZINC.

THE ABUSE OF THE HAND CAMERA.

By FREDERIC G. P. BENSON.

O piece of apparatus ever introduced for the practice of photography has probably been more misused than the self contained camera, intended primarily for use in the hand. Its apparent simplicity is very misleading, and so far from being the easiest method of commencing photography, it is really a difficult form of the art, and should not be adopted until the worker has had considerable practice with a stand camera and become thoroughly conversant with the various processes involved in producing a photographic picture. It is an undoubted fact that where the practice of photography is begun with a stand camera, in most instances in course of time pictures having some degree of merit are produced, whilst on the other hand where a hand camera is the instrument chosen to commence with, it is only a few exceptional individuals who ever attain even a moderate degree of success.

The facility of use inherent in the hand camera (which is such an attraction to some people), is the very thing which is the cause of this failure, and it is mainly because the proper functions of a hand camera are not fully realized that disappointment so frequently results.

Now what do we find usually happens? After a hand camera has been in use for a season or two, the only result is a heterogeneous collection of snap shots possessing neither technical merit, pictorial value, or personal interest. It is only in the rarest instances that pictures are obtained combining all these features—even with the most skilful handling, and the one thing the hand camera worker should strive for is to get the utmost personal interest in his pictures, and if they possess this, although they may be of little artistic value and only poor technically, they will be a valued possession both to the producer and his friends.

A hand camera is of most service on those little jaunts with

a party of friends, when photography is, so to speak, only a side show and to use a stand camera would involve delay and interference with the progress of the party. On days like these, a hand camera with its ready availability and its capacity for getting unconventional pictures, has a distinct value.

In order to obtain the utmost value out of these little views, they should be arranged in the order in which they were taken, and bound in a special portfolio (which need be of the most simple description) with a brief account of the outing.

A series of these records will in after years be a valued possession, and be treasured, where the same pictures stuck haphazard in an album or worse still, thrown loose into the nearest drawer, would not be worth the paper they were printed on.



WHITBY, ENGLAND,

F. G. P. BENSON.

HOW TO MAKE AN ALBUM.

By ALBERT STANLEY HULL.

IT occurs to me that my experience in making albums might be of interest and help to some who would like to make some really good ones. Everyone knows how the ordinary album looks after it is pasted full of views. Now it is not a first-class product, is it? Well, that is just the way it appealed to me and I set my brain to work to devise something better in the way of assembling my views and the following method is the result of that endeavor.

The idea is to print the pictures after the manner of printed albums and this is the way to accomplish it.

Use a printing frame the size of the album sheets, and have a glass in it. For small views up to $3\frac{1}{4} \times 4\frac{1}{4}$ use sheets 5×7 , for 4×5 use $6\frac{1}{2} \times 8\frac{1}{2}$, and for 5×7 use 8×10 .

Make some masks whose outside dimensions are the same as the paper printed on, and with a variety of openings to suit the various views.

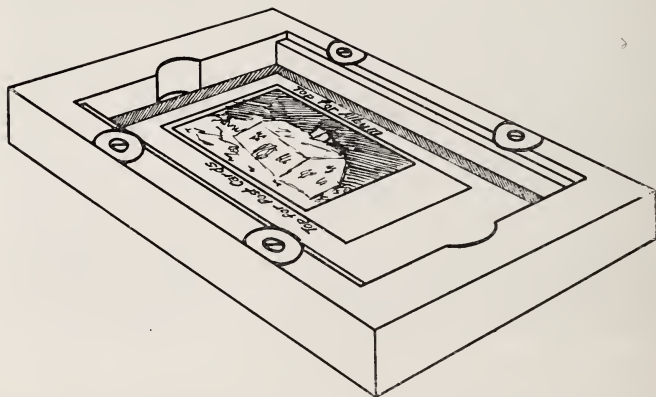


FIG. 1.

Lay the negative on the glass in the frame and adjust the mask over it and place the paper on both and print as usual. In this way the picture will be properly located on the sheet. The presence of the extra glass in the frame will increase the

time for printing in the case of glass plates but I find that the quality of the print is often improved. The print should not be in the centre of the sheet but nearer the right hand side and the top. The extra space at the left is of course necessary for binding.

Very pretty effects may be obtained by grouping several on one sheet where the views are particularly associated, which necessitates several masks to obtain the correct positions and each picture made at a separate printing.

For printing films the mask should be pasted to the glass and a little pocket left between mask and glass to receive the film. This keeps the film perfectly flat and properly located.

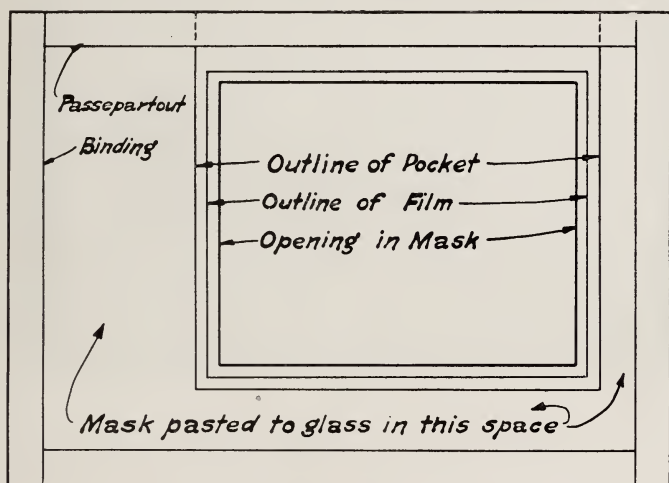


FIG. 2.

This is a very convenient feature especially with the old style films which curled so tightly and defied every attempt to straighten them out.

Most of my films are taken with a $3\frac{1}{4} \times 4\frac{1}{4}$ camera and I use 5×7 paper for printing them. This size of film is also convenient for post-card views so that I use the same mask for that purpose. An outline is drawn on the mask as may be seen in the illustration.

The edges of the glass mask should be bound with passepartout binding to prevent the light reaching the paper through the edge of the glass.

The sheets are finally punched and bound up with a cord or ribbon between flexible covers, which may be decorated according to the taste and ability of the operator.

I have a number of these albums made in this manner and they are the wonder and delight of every one I show them to. I would not consider for a minute returning to the older pasted album in spite of the greater cost of my method as I think the resulting quality is worth the expense.

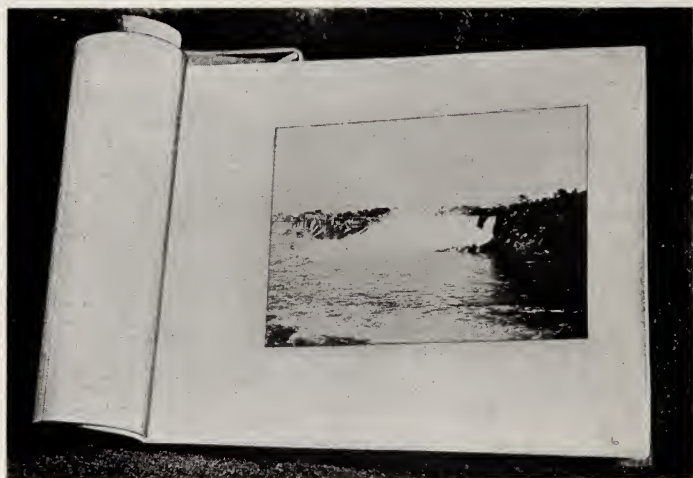


FIG. 3.



PORTRAIT.

R. Dührkoop.



MISTRESS MARY.

HELEN W. COOKE.

ZEISS DIAPHRAGM MARKINGS.

By HAROLD M. BENNETT.



UNTIL 1895, when the VIIA Double Protar was introduced the relative fractional foci (F system) was used by the firm of Carl Zeiss for marking the diaphragm openings of photographic lenses. The VIIA Double Protar is a convertible lens composed of two single lens combinations of equal or varying focal lengths known individually as Series VII Protar. For example the Series VIIA, No. 10, is a combination of two No. 4 Series VII Protars each having a focal length of $13\frac{3}{4}$ inches and combined, a focal length of $7\frac{7}{8}$ inches. It would therefore be necessary if the F system were used to have two rows of F markings, for $7\frac{7}{8}$ and $13\frac{3}{4}$ inch foci, the largest F values being 6.3 and 12.5 respectively. A Series VII, No. 5 or No. 6, of $16\frac{1}{8}$ and $18\frac{7}{8}$ inches focus may be substituted for the front lens, the addition of the No. 5 changing the largest aperture to F 7 and the No. 6 to F. 7.7 the combined focal lengths changing to $8\frac{1}{2}$ and $9\frac{1}{2}$ inches respectively. By interchanging the four elements seven different focal lengths can be had, the combinations, resulting foci, and largest openings being as follows:

Series VII	No. 4	No. 5	No. 6				
Focal lengths	13 $\frac{3}{4}$ "	16 $\frac{1}{8}$ "	18 $\frac{7}{8}$ "				
Largest aperture	F. 12.5	F 12.5	F 12.5				
Series VII A	No. 10	No. 11	No. 12	No. 14			
Composed of							
Series VII No. 4	No. 4	No. 4	No. 5	No. 4	No. 6	No. 5	No. 6
Separate Foci	13 $\frac{3}{4}$ "—13 $\frac{3}{4}$ "	13 $\frac{3}{4}$ "—16 $\frac{1}{8}$ "	13 $\frac{3}{4}$ "—18 $\frac{7}{8}$ "	16 $\frac{1}{8}$ "—18 $\frac{7}{8}$ "			
Combined Focus	7 $\frac{7}{8}$ "	8 $\frac{1}{2}$ "	9 $\frac{1}{8}$ "	10"			
Largest aperture	F 6.3	F 7.	F 7.7	F 7.			

If the diaphragm openings of these combinations were engraved on the lens mount it would necessitate seven rows of figures which would be somewhat confusing. It was therefore necessary to use a system of diaphragm markings which would be suitable for the various foci. A simple solution was to engrave upon the tube, a scale, the divisions of which correspond to a change of one millimeter in the diameter of

the iris aperture, in other words by adapting a regular millimetric scale to indicate the diameter of the iris aperture. On the scale half centimeters and centimeters are indicated by larger strokes, and only the 3, 4, 6, 8, 12, 17, 24m/m divisions are denoted by corresponding figures.

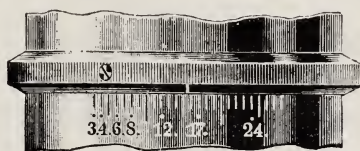


FIG. 1.

Prominence is given to these numbers since the squares of two consecutive numbers are related at 1:2 the exposures corresponding to these stops must be as 2:1 no matter what the focal length of the objective may be. Fig 1 shows the scale as engraved on the No. IV. Zeiss tube mount with the iris-aperture adjusted to 15.6 m/m. The lines numbered on the IV tube mount, and relative exposures with any combinations of lenses which fit it, would be as follows:

Numbers on No. IV mount	3	4	6	8	12	17	24
Relative exposures	1	2	4	8	16	32	64

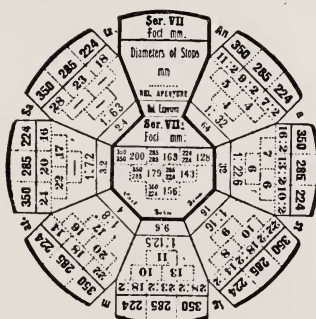


FIG. 2.

Double Protar lenses are provided with caps having diaphragm markings as shown in Fig. 2 (for No. IV tube mount) by means of which the relative F value of the millimetric markings can be easily learned. On these caps the focal lengths of the single elements are expressed in millimeters as shown

in the outside row of figures. Thus, for instance the table supplied with cap of the No. IV tube mount contains the necessary data for the Protar-lenses of Series VII having focal length of 350, 285 and 244 m/m respectively and also for their combinations in the form of Double-Protar Series VIIA. The outer row of figures indicates the focal lengths of the single elements.

The F and U. S. markings are indicated by the fifth and sixth rows, and the relative opening in millimeters for the various combinations, by the second, third and fourth rows. The second row shows the opening in millimeters for the focal length indicated in space above it in the outer row. Half of this opening would give the same F aperture for a combination of two of these lenses. For example, the opening in millimeters for a Series VII Protar of 350 m/m focus to correspond with F 32 would be 11 while with a VII No. 10 Double Protar composed of two 350 m/m lenses the opening for F 32 would be one half of 11 or 5.5 indicated by the 2 after 11. The third row shows the millimeter opening for a combination of two Protars of different focal lengths—thus with a combination of 350 m/m and 285 m/m F 32 would be 5 m/m and with a combination of 350 m/m and 224 m/m the opening would be 4 m/m.

The center of the diagram shows the resulting combined focus of any two of the lenses indicated on the outer row.



HOUSE FLY: $\times 64$ TIMES. (Fig. 1.)

J. M. BANDTEL.



BROWN SPIDER: $\times 64$ TIMES. (Fig. 2.)

J. M. BANDTEL.

INSECT PHOTOGRAPHY.

By J. M. BANDTEL.



IN order to comply with your request for an article on some of my experiences with a camera, I will select one on the photography of insects, for illustrative purposes in magazines and for the use of schools.

A friend, who occasionally writes for the magazines, on subjects relating to horticulture, was preparing an article on the destructive insects that infest trees, and it was desirable to illustrate his text with photographs showing the different stages of development of some of these pests.

As these insects were very small, it was necessary to make some of these photographs considerably larger than the original specimens.

Having had no calls for this kind of photography in the usual course of business, and therefore having no special instruments for this kind of work, I was obliged to resort to the use of such instruments as were at hand, which happened to be a very short-focus lens and a large portrait camera with very long bellows.

I had made some experiments in this kind of work, using the fly and spider as subjects.

I submit herewith, a few photographs of some of the specimens.

Figure one shows the common fly, enlarged about sixty-four times. Figure two is a good "portrait" of the little brown spider who generally does business in the corner of the same room in which the subject of figure one is to be found (being a great lover of the owner of the "bright eyes and gauzy wing"). This "portrait" is about sixty-four times as large as the subject who "posed" for it.

The spider and fly had been killed with ether (in order to avoid mutilating the specimens), and were fastened to a sheet of paper with a few touches of liquid glue.

In photographing specimens of this kind it is important

to get as perfect ones as possible, and if it is necessary to kill them, this should be done as quickly as possible and in such a manner that they will not be damaged.

For making these enlargements isochromatic plates are almost indispensable.

For this work a very short-focus lens is required; one, covering plates about three by four, or four by five inches, and having a focus of about five inches. A lens of the rectilinear type, and having a considerable depth of focus is preferable. Small diaphragms are required. The length of camera bellows required depends upon the amount of enlargement desired.

In making the accompanying enlargements, the distance from lens to plate was about six feet for those requiring the greater magnification.

A specially long-focus camera, but otherwise of small size, might be desirable, although the one used for the accompanying enlargements was an ordinary portrait box admitting of an extension of about six feet.

It is desirable to have the support for the specimens to be photographed, so fastened to the camera bed or stand that the object can be moved toward, or from the lens, according to the amount of enlargement desired, and preferably while observing the image on the ground glass. This can be accomplished by several mechanical arrangements that are in use by most photographers (especially by those who have some experience in the ordinary methods of enlarging). It is very important that the whole outfit be free from vibration, as the exposures may be anywhere from a few seconds to several minutes, and where great enlargement is required, especially in working with very delicate specimens, a very slight movement means failure.

These enlarged photographs of very small insects and other specimens, are valuable for school work as well as for illustrative purposes in magazines and books, and where it is desirable to exhibit to classes it is best to make the enlarged negatives only up to about two, or two and a half inches in diameter, and then make lantern-slides from them, by contact printing.



THE WILLOWS.

W. H. Porterfield.



CHIMNEY ROCK: YOSEMITE.

EDGAR A. COHEN.



After leaving El Portal for Yosemite.

EDGAR A. COHEN.

THE NEW SCENIC ROUTE TO YOSEMITE

By EDGAR A. COHEN.

EVERYONE has heard of Yosemite—hopes to get there some time—and having been once would willingly go again. First a crater: next a lake: and now a walled valley, containing the greatest number of wonders within a limited space. I have hunted and fished through the canyons of the King's River; have carried my camera through the grand canyons of the various forks of the Kaweah and Kern Rivers; but have always waited for a chance to devote sufficient time to photograph Yosemite properly, and am still waiting.

In the summer of 1905, some of our local capitalists, having become convinced that a railroad up the Merced River would

be a money maker, for the double reason that it would be the scenic short line of the Continent and would reduce the traveling time more than half, organized the Yosemite Valley Railroad Co., and started building from the city of Merced, which is on the main lines of both the Southern Pacific and Santa Fe systems.

By rushing work, the road was opened for business in the middle of May, 1907; and shortly thereafter the management asked me to photograph it for them. I inquired whether the water were not too high for trout, and on being assured to the contrary, accepted their proposal.

My experience photographing in the Sierras has taught me, that owing to the great height of the cliffs, medium and short focus lenses are required; also that the less weight you carry, the more pictures you get. I want a contact picture of sufficient size to show the subject without necessity of enlarging; so I took a 5 x 7 box with a long bellows, and my Goerz and Zeiss lenses. Photographers will understand that the length of bellows is necessary in order to use single combinations of a lens.

I loaded up twenty-one plate holders, mostly with Seed 26 though I also used some non-halations. In the mountains non-halations are of use to hold your distance, without getting it flat from overtime. The distance will be dense, but can be brought out to the required strength by special printing. For contrasty landscapes without distance a single coated plate is best, as a non-halation will simply increase the contrast. I also loaded my film pack adapter. I like plates better; but with an adapter in my camera case, I have a large increase of ammunition.

The name Yosemite Valley Railroad Co., does not mean that the road enters the Valley, for while it would gladly do so, the United States government refused permission, so it extends only seventy-eight miles to the line of the Yosemite Park Reservation. The terminus is a city of tents at present, named El Portal, so called because of its being just below the gateway of the gorge of the Merced River.

By permission of the United States Government, the railroad as part of its system has built into the Valley a stage road, which for varying beautiful and grand scenery surpasses any



EL PORTAL (YOSEMITE) IN JUNE 1907.

EDGAR A. COHEN.

road of equal length I know of. The distance from El Portal to the Valley is twelve miles.

Leaving Merced on the railroad, the trip for a few miles is through a farming country, becoming prettier as you advance, until at Merced Falls, twenty miles away, you come into the Merced River Canyon which you follow all the way to Yosemite.

Of course it was all new and pleasing, but I had the extra incentive of locating pictures. At Merced Falls my picture instinct was aroused, and for the rest of the trip, I hung off the platform on the river side, all eyes and interest.

In the early gold days of California, the Merced River was one of the richest and most productive streams, and millions of dollars were taken out by hydraulic mining. This was prohibited by law a number of years ago, owing to its shoaling navigable streams with debris.

The Merced for some fifty miles runs through the "Mother Lode," and there are mines scattered along the track for that distance. Many of them have not been much worked of late, owing to the ore being of too low grade to warrant the expense of getting it to the smelters; but now with railroad facilities afforded, there is renewed activity in both mining and prospecting.

I saw lots of picture possibilities. There were old shafts and miners' cabins, and occasionally men were seen working cradle and rocker, or sitting on their heels panning the sands for gold.

A few miles further along we came to Box Canyon, with the River running swift and deep between palisaded walls. At the upper end workmen were building a dam to furnish power for the Exchequer Mine. Over the chasm, some seventy-five feet above the water, hung a suspension bridge; and above that a wire cable for carrying freight across the river. Further up are a number of similar dams and bridges.

By degrees the hills become larger, until behold they are mountains, and in the same ratio the beauty of the scenery increases.

You come finally to Bagby, boasting the double distinction of being the only town and having the only wagon bridge between Merced Falls and Yosemite. It is not in truth much of a town, consisting as it does of store, hotel, stable, saloon, electric

generating plant which derives its power from the dam, and the stamp mill of a nearby mine. However it is said that during the building of the railroad, the owner of the first four utilities cleared \$75,000 from the construction gangs. I later spent a couple of days here picture making.

Above Bagby the walls of the canyon draw together, and the railroad track perforce hugs the river, the right of way in many cases being chiseled out of cliffs. As you cross the North Fork, you see the whole river dump itself down 50 feet in a short swift cataract.

I made my headquarters at El Portal, and found it a charming place for picture making. The river drops down in a succession of cataracts, with a roar that reminds you of Niagara. Here is Crane Creek, with falls that would be talked about were it not for the greater ones of Yosemite. Sloping precipitously to the South bank of the river are the Chinquapin Mountains covered with yellow and sabine pines. Over a high cliff leaps the Chinquapin Fall. In fact there are pictures all around you. The air is like wine, giving you a perennial appetite, and happily it is a place where you can get good things to eat.

Anyone wanting genre pictures, would have a great field for them at El Portal. The new route has absorbed at once the bulk of the tourist and freight traffic, so that the point where the trains unload and the teams take up the burden is full of ever changing subjects. The incoming and outgoing stages, the Indians, the tenderfoot arrayed to conquer the wild and woolly West, the occasional pack train, and the varying types of humanity, are all picturesque.

There are trout in all the Sierra streams, for those who know how to get them, and the Merced is no exception, even though the report has gone forth that the Indians are the only successful fishermen. The proprietor of the hotel at El Portal employs two Indians, who fish for him, and bring in good strings. They use grubs and worms for bait; but when they arrive with their catches, their rods are not unjointed, and from their leaders hang an assortment of derelict flies, that were made to sell, and of which no self respecting trout would take any notice. Not so the tourists. They crowd around, and divide their attention between the fish and the flies. The



PINE POINT: YOSEMITE.

EDGAR A. COHEN.



THE ROAD FROM EL PORTAL TO YOSEMITE. EDGAR A. COHEN.

water was too high for first class fly fishing; but I had no trouble in getting what I wanted on royal coachman, caddis, professor and black ant.

There is not much game in this country; but in the Valley it will strike you as curious to see notices posted, forbidding the throwing of stones or sticks at the bears. This is not a joke. There are a number of bears there which are tame and harmless if you leave them alone; but on several occasions of late, they have been met on the trails pursuing the even tenor of their ways, and the guides have stoned them to hurry their movements.

One of my photographic trips was down the railroad to the Exchequer Mine, at the head of Box Canyon, where I was hospitably received. In crossing the suspension bridge it was inclined to dance with me; and when I did not walk exactly in the middle it side stepped also. I made a number of nice pictures there, but had to work my way around rocky walls, where a slip meant death, and where experience taught me rattlesnakes would abound. Sure enough I poked several large fat fellows out of the way with my tripod. I could have made more pictures had I gone farther, but I was tired and did not like the company.

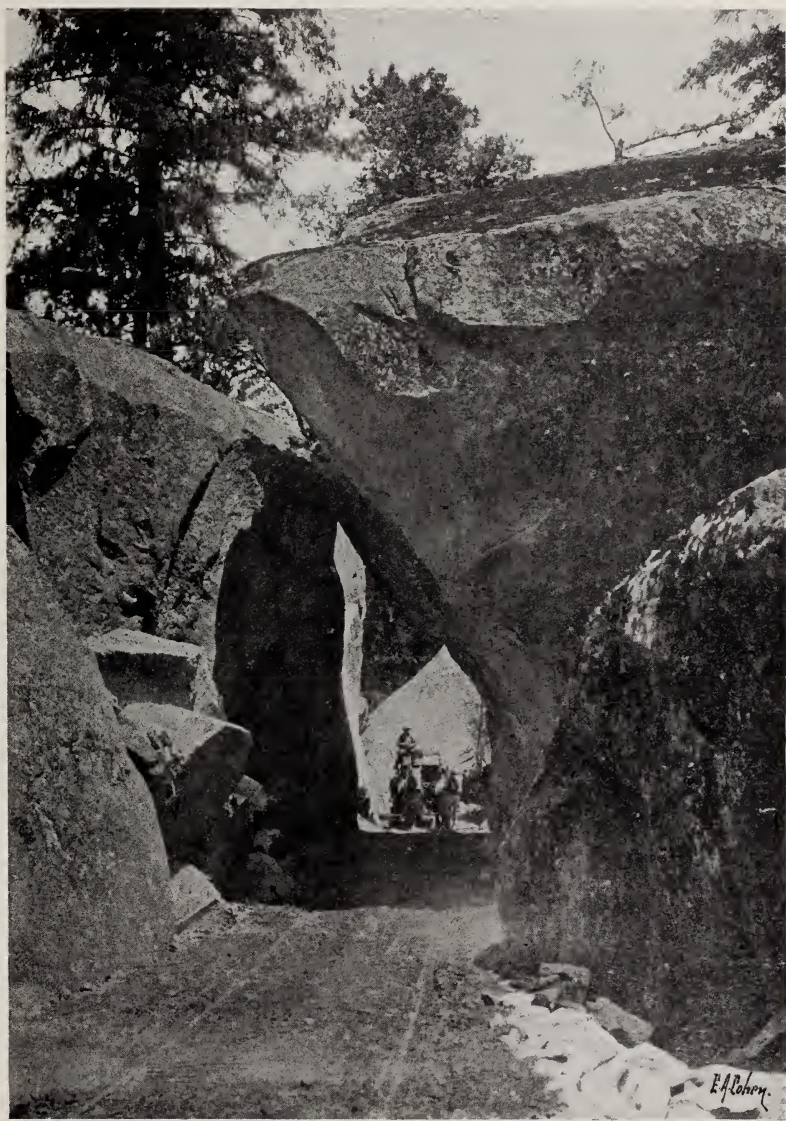
I have always said that good mountain pictures mean hard work; climbing to points of vantage, and cutting away obstructing brush and branches, and you must be properly equipped with heavy hob-nailed top boots, strong trousers, no surplus clothes on body, and a cool shade hat. My camera case contains five plate holders, a film pack adapter, camera and camel's hair brush, for dusting lenses and slides. Around the case is a canvas cover, and between the two I carry my field note book, color screens, extra lenses, focusing cloth, hatchet and garden shears. The whole outfit, together with tripod, weighs about thirty-five pounds in the morning, when I start out, but later in the day it seems much heavier. In my pocket or hand, as the case may require, I carry a view finder, which enables me to test the angle my lens will cut, without setting up my camera to find out. It is a great labor saver.

On the stage road things came easy. I travelled it on mule back, with camera case hung on the pommel of my saddle. Oh, that road! I made some forty views along it, and could easily

have made four hundred, but they came so easy it seemed a shame. Talk about picture making being an instinct, why there were pictures all around you, and the hard work was in choosing only the best, and having the courage to pass the others. There were numerous cascades falling from the cliffs; in places the road was blasted from the cliff; wild flowers and ferns abounded; giant rocks, that could not be removed, were either tunneled through or built around; an arch was drilled to let the road through a wall of rock; a rock as big as a house had fallen into the river bed and split, its shape reminding you of the shell partially stripped from a hard boiled egg, and then the first view of Bridal Veil and the wonders of the Valley.

There was a cataract six miles long beside the road. While the snows are melting, in the spring and summer, the Merced is a wild unruly stream, its predominant color being white. Over much of its course it averages more than twenty miles per hour, and as if ashamed of such turbulent action at its time of life, covers its face with foam and spray. Getting definition in such wild water is almost impossible. Unless you are far above it, you see only the white crests of the waves. You must time for the dark greens, reds and browns of the trees, and for the shadows. Use a very soft developer, and you will find your picture blends the half tones properly into both high lights and shadows. I found $1/75$ second would stop the motion of the water when I was behind and 100 feet above it. In the same water coming toward me, at a twenty-foot altitude, the same exposure showed little else than foam. Anyway my battle cry is, "Give plenty of time when you can," and that is what I did.

The San Francisco Camera Club is said to be the largest organization of the kind in America. The Sierra Club, some 500 strong, spends the summer vacation months in the mountains. Both clubs are picture makers, and that they took advantage of the new scenic route for their 1907 summer outing, made my trips over road and trails as full of companionship as if I were on the streets of San Francisco.



ARCH ROCK: YOSEMITE.

EDGAR A. COHEN.



BRIDAL VEIL FALLS FROM EL PORTAL ROAD (YOSEMITE).

EDGAR A. COHEN.

WHAT GOES ON IN A LENS.

By GUSTAV DIETZ.



HAVE you ever thought what a lens really is? Have you ever tried to understand the principles of light and illumination? Or have you just taken for granted what others have told you or what you have seen printed? If this is the case, have not conflicting explanations sometimes raised a doubt in your mind concerning the value of the information you have acquired, or an uncomfortable feeling that there is something fundamentally wrong about most of the popular ideas on the subject of lenses? Possibly this has led you to try to make some tests with your own lens—probably a double anastigmatic or rectilinear lens; that is, one lens system in front and a similar one in the rear of the lens barrel. Is it not your belief, as you probably have been told, that all rays cross in the center of the lens itself?

Let us go over the matter of what focus means and why the image is reproduced on the plate. Possibly some points that are new to you may appear.

In the first place we will discard altogether the class of rays which opticians make the most use of to explain the action of lenses. These are the formidable parallel rays, which are abused every time the word focus is mentioned. Parallel rays have nothing to do with focus, in fact never come to focus. They exist in such a minority that you might express the proportion as one parallel ray to a million others. As the eye sees everything in perspective, a fact that it is scarcely necessary to demonstrate, so it is with the lens; we can therefore consider only the perspective rays as producing images on the ground glass.

In order to convince you of the necessity for entirely disregarding parallel rays and to show that an analysis of their action leads to conflicting theories as was mentioned in opening, we will ask you to make a simple experiment with parallel rays. Take a coin one inch in diameter and with a lens of one

inch aperture, copy full size to give an image of one inch. We have here as many parallel rays as anyone needs for demonstration entering a one inch lens. Strictly following out the principle that parallel rays meet at a point the focal distance away from the lens, we would have no image at all but merely a point of light—which is an obvious contradiction to the actual result achieved and illustrates the difficulties that parallel rays can get us into. The only way of accounting for the image is that it was formed by perspective rays.

Now let us look at image-forming and focus from the viewpoint of these perspective rays. A landscape, for instance, is formed of a multitude of small objects each one having a certain place and each one sending out rays in every direction. A certain number of these rays reach the lens. From any one object, the rays form a cone, the base of which is the lens opening, and the apex the object from which the rays start. Each cone of rays is bent on passing the front lens system and brought to a focus point again. This focus point forms the apex of another cone, similar to the first, whose base is now the rear of the lens.

Suppose we have a symmetrical lens of ten inches focus. The front combination working separately will have a focal distance of twenty inches, which means that all rays coming from an infinite point will be brought to focus at their corresponding point on the ground glass twenty inches from the lens. Objects nearer than an infinite distance will send rays that strike the lens at a different angle; the nearer they are, the smaller the angle to the lens surface. Furthermore, the nearer an object is to the lens, the smaller number of rays it can give off that will strike the lens opening. For purposes of illustration we can consider this bending process as the ability of the lens to turn all light rays that pass through it a given number of degrees toward its center. It will at once be seen that if cones of light strike the lens at different angles, the same number of degrees bend applied to all of them will result in their likewise leaving the lens at a different angle and there can be no common focal point for them behind the lens. Part of the picture is out of focus. Thus it will be seen that when we endeavor to photograph objects at varying distances from the lens, we are likely to get into trouble.

Now let us consider the action of the complete lens system with the rear member interposed. The rays which have passed through the front lens and have been bent, next enter the rear system and go through the same process of refraction. In the ten-inch lens mentioned above, they will now come to a new focal point ten inches behind the center of the lens. The second lens has cut the focus of the front lens in half and has therefore reduced the image in lineal measure one half; in square measure (area), one-quarter.

It will be seen that the second lens has only the rays of the first lens to use as material for forming the new image. This same quantity of rays is concentrated on one-quarter as large an area as it would have been if the front combination alone had been used. Therefore the image formed has four times the illumination, or, to get an image just as strong, the double combination requires only one quarter the exposure required by the single lens. Some photographers explain this by saying that with a single system the rays are required to travel a long distance behind the lens and must therefore have a longer exposure to get time for this. However, in view of the tremendous velocity of light, it seems that the few inches concerned make a negligible difference. It is the number of rays rather than their length that counts.

STOP VALUES AND STOPS.—We have already seen how the landscape is reproduced on the ground glass by concentrating rays coming from its various points to the corresponding points on their respective planes of focus. Now let us look at one of our cones again. The rays that form the outer sheath strike the lens near the circumference of its opening and are called marginal rays. Those that form the inner core enter the center of the lens opening and are called central rays. The central rays enter a lens more nearly parallel to each other than do the marginal rays. Consequently they are refracted evenly and come to sharper focus. But the outer rays enter the lens at different angles and are not refracted as evenly as the central rays. They are apt to cross either in front of or at the back of the ground glass on which the center rays, on account of their close position, are nearly in focus. In other words they are trouble-makers and the necessity of getting rid of them arises. This is done by putting a diaphragm or

stop in. The marginal rays strike its surface and are prevented from passing through the lens. The central rays alone pass through and give a clear image with no "splashing" around the edges.

Stops have another value in correcting vignetting—the distribution of more light in the center of the plate than in the corners. There are two reasons for this action. In the first place, rays coming to the center of the plate hit practically at a right angle. They therefore penetrate more deeply into the emulsion of the plate than do the corner rays which hit it at an oblique angle. In the second place, a greater number of rays does actually come to the center of the plate than is received at the corners. We have noticed in focusing that the ground glass is splendidly illuminated in the center but quite poorly at the corners. Remove the ground glass from your camera and look at the lens from a corner of the back of the camera. You will notice that only about half of the lens is visible and that the other half is shut off by the conformation of the lens barrel. Theoretically this would mean that half the rays were excluded from the corners of the plate; but some of them are reflected and we do not lose the entire amount. Now if we put in a stop small enough to be seen at its full diameter from every part of the focusing screen or camera back, it is evident that we get a uniform number of rays to all parts of the plate. Besides this we have cut out the marginal rays and thus improved the definition of the image.

It must be pointed out, however, that we cannot always afford the loss of light that the use of a stop entails. If we divide the lens into three zones, central, intermediate and marginal, each having the same diameter, they will respectively have an illuminating power that can be expressed in a ratio as 1 to 6 to 15. Therefore when we stop the marginal rays by the use of a stop we do so at a cost of 15 units of light and have sacrificed two-thirds of our illumination.



THE OLD WELL.

Mrs. Eleanor W. Willard.



From the Crow's Nest, SS. Philadelphia.

ROBERT E. M. BAIN.

PHOTOGRAPHY AT SEA.

By ROBERT E. M. BAIN.

MANY persons refrain from picture-making at sea from fear that unless a small hand camera be used the vibration caused by the machinery will prevent sharpness of image. The best pictures are always obtained by use of the tripod or stand and the larger cameras can only be used by its means. The vibration in stateroom, engine room and on deck, especially on the fast steamers, is very noticeable, but a little thought will prove that the camera vibrates in common with its surroundings—not more so—hence timed exposure may be made with impunity even for an extended period of an hour or more, with the best of results. Many interior views may be made by placing the camera in a steady position, anchored as it were and left for a long period without further attention, and the results found as good as if taken ashore under the best circumstances.

Plates and filters are now supplied which are sensitive to color value and these are most desirable in "seascape" work in view of their adaptability for cloud effects—most necessary in such pictures. Even for views on deck and in the saloon the color value is a feature, for the yellow-brown of the planking and the color scheme of the decorations are quite flat otherwise.

As a hint at desirable subjects to be found at sea we may mention the forward deck, particularly when the seamen are belaying or getting ready to drop the big anchor. The companionway to the bridge generally shows a quartermaster on duty, an excellent subject. A little persuasion will induce a good humored officer to pose either "on deck" or on the bridge. The wake of the vessel is always a favorite, and since it is not necessary to have the camera vertical the effect of the tumbling water is very attractive. On some ships the "fire drill" and the "boat drill" make interesting pictures, but this work at practice drill is generally performed now-a-days in port. With the use of the tripod a most interesting picture may be made when the vessel is "signalling" at night to a passing ship. It would be impossible to hold the camera in the hand steady enough as the exposure should last the entire time of the burning of the Coston light to get the best effect. Many interesting pictures can be secured of the steerage passengers dancing and singing. If the weather is fair and the ship fairly steady a curious picture may be obtained of the deck by hoisting the camera by the signal halliards, lens down, and snapping the shutter by means of a cord. The "taking" and "dropping" the pilot are always subjects of interest but not to the same extent as when the small pilot boat met the ship "600 miles out." The steam pilot boat has spoiled much of the romance of the pilot's coming aboard. Coming into and leaving port afford excellent means of obtaining interesting views, not the least of which is the crowd on the dock or pier. The arrival of the doctor's boat at Quarantine, with the Government reservation as a background, is attractive as a picture; and the run down the harbor of New York requires mention as among the list of interesting subjects. Bear one thing in mind, however, it will be useless to ask permission to take views from the bridge and the suggestion will hardly be received with favor.

In photographing the sea endeavor to "quarter" on the sun as much as possible without letting the direct rays strike the lens. This brings the shadow side of the waves towards you and the picturesque effect will be much heightened. Another feature of interest in connection with this class of photography is the absence of vertical lines allowing the camera to be pointed up or down without disastrous results. When permission can be obtained, very interesting views may be obtained from the "Crow's Nest" on the foremast. It is not at all a dangerous climb and the view is charming.



SAXON MILL, WARWICK, ENGLAND.

R. S. BRUCE.



JESSIE B. DIXON.

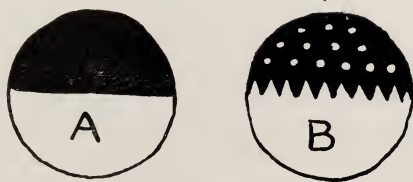
TWO USEFUL DODGES.

By W. H. BRACKENRIDGE.

PERTAINING to Platino.—If I may use the oft repeated phrase, I will tell you how to make Platino prints “with the delicacy and charm of an old etching.” Your negatives should be of the clear “snappy” variety—not too dense. Place the paper on the negative with the emulsion side up; close the frame and print in the sunlight. Print exceedingly deep, more so than if the emulsion was in contact with the negative. The grain of the paper has a softening effect upon the print, and the printing does not assume as much “depth” as in the ordinary method, consequently print until the lights are well tinted. Wash out the silver as usual and have a ripe gold bath thirty ounces water; gold, one-half grain, and neutralize with borax. Tone until the bright red

begins to change to brown, then stop; wash the print thoroughly, place it in hypo, hydrometer 20, for fifteen minutes, and then give it a thorough washing. The grain of the paper (which is very uniform) gives a very sketchy effect and is especially suitable for large portraits.

Clouds Without a Ray Filter.—It has long been known that about the only two ways of getting clouds and foreground on the same negative in printable equality is with either ortho plates and a ray screen or with ortho plates and a sky-shade shutter. My method is somewhat similar to the latter. Secure a pill box that will fit snugly on your lens mount or barrel and cut out one-half of the front as shown in Fig. A. Now cut notches along the line one-eighth of an inch deep as shown in Fig B., about ten or twelve will do, and then with a red hot needle, size five, burn about fifteen holes in the solid part, taking care to have them clean cut. The instrument is now complete with the exception of blacking the inside of the cap. The principle of working is this: The light from the foreground passes through the lens to the plate, while the light from the sky must pass through the small holes in the upper half of the pill box, thereby equalizing the intensity of the two lights. The serrated line prevents the sky and foreground lines from ending too abruptly. Perhaps you have only a little sky in the picture. Slide the cap out on the lens tube and a greater number of rays of light from the foreground will pass, giving the necessary amount for the sky. If there is a dark object to the right or the left of the picture turn the shade so as to illuminate it. It is superfluous to say that ortho plates are necessary. I do not claim that this will suit every condition, but as a rule it is applicable in ordinary outdoor work. When making a home portrait of a lady in a white dress use a shade with larger holes in it and turn it down so as to exclude the strong light on the dress, thereby equalizing the light and securing printable whites.



GUM PRINT POSSIBILITIES.

By W. H. THOMPSON.



THE statement is very frequently made that the gum process is suitable only for certain subjects and certain effects. This impression, the result no doubt of an imperfect knowledge of the process, is altogether incorrect; as a matter of fact quite the contrary is true, and a little consideration and study of the subject will show that "gum" is more flexible and capable of a greater variety of effects than any other photographic printing method. With it, it is possible to obtain soft, delicate tones, exquisite definition and beautiful gradation; the deep rich effects of a carbon print; or on the other hand broad, sketchy results not unlike charcoal drawings, as well as certain qualities distinctly characteristic of the process.

With the aid of local manipulation it becomes a most sympathetic medium in the expression of individual pictorial taste. False values in any part may be corrected, undesirable features modified or entirely obliterated, scattered details simplified, clouds worked in a blank sky and numerous other effects which will readily suggest themselves as occasion demands.

In the single printing method our range of gradation is somewhat limited, but from a pictorial point of view this is often a decided advantage and with a little care and a suitable negative it will be found amply sufficient for a great many purposes; if not we may resort to "multiple" printing which will give a range of tones limited only by the depth of the pigment used.

There is scarcely any limit to the variety of color at our disposal; with a very few exceptions any pigment that is suitable for water color painting may be used.

Then too, almost any kind of paper from Japanese tissue to heavy drawing board will be found suitable, some of it as it is, or in some cases with the addition of a coat or two of

sizing. If the original color does not suit it may easily be given any desired tint with a thin mixture of gum and pigment.

The texture of a print has an important bearing on its artistic qualities, and in this also gum offers an almost unlimited choice. If we select a fairly smooth paper, coat rather thinly and print to just the right depth we will obtain a print which cannot be surpassed for smoothness of grain. Papers of various surfaces, thick or thin coatings, quiet or forcible development all influence the texture of the print.

A most beautiful quality distinctly characteristic of "gum," is the result of a slight running of pigment giving a strikingly soft and mellow effect, very difficult to obtain but well worth most patient effort.

The multiple printing method has greatly increased the possibilities of the gum process as an artistic medium, and a great many effects difficult or impossible to secure with the "single" method may be obtained quite easily with its aid. In local work in single printing great care is necessary and an unfortunate touch of the brush, or too much force in development in a particular part, will often spoil a print; but with "multiple" printing such mistakes may be covered over and corrected in the next coating, so that much greater freedom of touch may be allowed.

Combination printing with the help of the multiple method is much easier than with other methods, clouds, figures or any portion of other negatives can be introduced with great ease.

It sometimes occurs that some of the planes in a picture are disagreeably sharp; the background in a figure study, or the distance in a landscape for instance. A print is made in the usual way and in development the portion needing correction is washed off; coat and print again this time with a sheet of glass between the print and negative or a piece of bolting silk over the printing frame; develop and sponge off entirely from the part already printed. The result will be a great improvement over a straight print.

Many beautiful effects may be obtained by printing in two or more harmoniously related colors, as for instance in the case of a landscape; a rather deep print in a delicate cobalt or light ultramarine, and over this a somewhat lighter print of Vandyke brown. Or as a suggestion for an outdoor figure study,

a light background of a cool grayish green and the figure in red chalk. With a little study endless possibilities may be found in simple two-color schemes.

For fuller and more complete color rendering the gum process is particularly well adapted. With several printings in carefully chosen colors it is possible, from a single negative with the aid of local development to secure results restricted only by the artist's taste and skill.

For producing natural color prints from the usual three-color negatives, "gum" is very suitable, and the deficiencies and inharmonious results so common in this class of work are more easily avoided than in any other printing method. It is a very difficult matter to make theoretically correct tri-chromatic negatives and the ease with which each separate color may be corrected in the gum print is greatly in its favor. If after the print is finished the color rendering is found to be faulty additional coatings will usually set them right. With a fourth negative and a print in a neutral tone the chances for a correct rendering are still better.

In this necessarily brief article an attempt has been made to outline in a general way, a few of the possibilities of the gum process. The subject is by no means exhausted but enough has been said to show what may be done with intelligent study and experiment. Everything depends on the artist's training and ability.

It must not be supposed that "gum" is without limitations. Like all other printing methods it has its restrictions—some of them very pronounced in fact—but the careful, painstaking pictorialist who believes in quality rather than quantity will find it a most valuable aid in the expression of artistic feeling.



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**SUGGESTION FOR
DECORATIVE DESIGN.**

Rudolph Eickemeyer.



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**SUGGESTION FOR
DECORATIVE DESIGN.**

Rudolph Eickemeyer.




PERFECT JOY.

MRS. W. W. PEARCE.

PAINTERS VS. PHOTOGRAPHERS.

By OTTO WALTER BECK.

N a volume recently published, which has already made its way into hundreds of studios, I have said all I have to say about the application of "Art Principles in Photography." What remains to be explained to the art-aspiring photographer, is the difference that exists between the work of the modern portrait painters and the portraits made by the most advanced photographers.

This difference should be one of our serious studies, because the fashionable and the famous portrait painters educate the public to a taste that leads it to expect work done in a similar spirit by all portraitists, including the photographer. This is quite a proposition to us because our tools,—the camera, plate and print, yield a product much more closely tied to the severe facts of nature.

In photography we have been accustomed to think ourselves too greatly limited, but we are now waking up to see our plates yield an increased range in technique, and this will enable us to develop our art. By this added power, we shall obtain qualities that constitute not a bad rival to the best in painting, while always on the safe side as regards the likeness.

To exploit this new means of expression, we must understand that in paintings the life-likeness usually results from intentional exaggerations of the features and forms that in the model pleased the artist. For instance, in this portrait of Miss Barrymore by John S. Sargent the movements of the hair, the swing of the eye-brows, the long line of the profile and neck are exaggerations. To them we owe the impressiveness of this remarkable masterpiece. Every touch in this drawing follows a law of selection, and it is marked by its proper emphasis. For example, those eyes photographed would not yield the life that is in this drawing; the open mouth, if printed from a good straight negative, would not express what is in this work by the hand. Even the background,

though it is simple in treatment, is yet "alive" in a way not to be found in a good straight photograph. The background satisfies us in this drawing, because it is perfectly balanced with the form, and the treatment gives it vibration in harmony with the picture's movements.



Fig. 1. Miss Ethel Barrymore, from the sketch by John S. Sargent, R. A.

Why does art insist upon this mode of rendering nature?

Let us consider that when we come unnoticed upon a person, his absorption in self or in work removes him from us in such a way that we may speak of him as being an object of interest or a motive for a picture, but we do not think of him when so absorbed as a ready subject for a portrait. This is because there exists no direct communication between us.

When, however, we speak to that person and he turns toward

us his eyes, that is his attention, we have established the condition for a portrait. This personal contact must be felt in all portraits.

When we are standing before a good portrait it seems as if the one portrayed were existing solely for us who view it. This imagined intimacy is a subtle flattery to which we are susceptible.

Has it not occurred to all of us that our photo-portraits do not sufficiently establish such intimacy; further, that we do not get in attitude or in facial expression those effects that we see when we are actually conversing with people?

For instance, a beautiful woman when replying to our question, will conduct herself so that while she meets our gaze, her own is sufficiently indirect to permit us at the same time to see those qualities of beauty of which she is possessed. While thus in conversation with her, the beauty of face, or her rich hair, or the graceful lines of her form will have their effect upon us. If we speak to a woman not so favored, one whose thoughts are given over to practical things of life, we shall find in her directness of speech and her look, our strongest impression of her.

In each and every such encounter we find that our eyes ignore certain characteristic of the person and we see very distinctly certain distinguishing characteristics. For instance, we find the eyes "speaking" and then it is our business to so make our picture that our gaze is directed to them easily, by properly accenting them, and we thus receive the impression from the picture that we had when seeing the person.

In this Sargent drawing of Miss Barrymore we find her eyes remarkably expressive because the artist has "managed" all the forms, the gradations, the accents and the omissions, so regulating his art that we see her as he did. We gather from the picture that the artist was in animated conversation with her.

A similar centering of our interest in the eyes is true of this larger portrait of Lady Hamilton (Fig. 2). This was a difficult task because the master had to contend with all the bewildering richness of the material. However, he succeeded in exercising control over it.

The picture is not a copy of nature, it is not a merely ar-

ranged pose, it has none of the truths that a good piece of straight camera work would give; but it has a truth of that higher kind which we may speak of as "portrait truth," and "pictorial truth," meaning thereby that this picture is full of



Fig. 2. Lady Ian Hamilton, from the painting by John S. Sargent, R. A.
By courtesy of *The Studio*.

managed exaggerations, as is the drawing of Miss Barrymore.

These points of difference are not easily understood by the layman, but experience will verify the statement.

Naturalistic though Fig. 2 is in pose and in execution, it yet has in its conception and its execution all the high technical

qualities, the imagination, and the mastery that we find in any of those great pictures by Velasquez, Titian, Tintoretto, Hals, Van Dyck, or other masters of the grand style. I assert that the quality of the curve of the chair wherever visible, is possessed of as much evidence of skill and management in bringing out the portrait as is any other of the picture's parts—even the eyes. Accent, the foil, plasticity, direction, intensity, and a hundred other factors enter in to make any part of this picture, let it be chair, fan, hand, lace, dress, background, features. They all show the same marvelous handling. And in this respect we find that the painted portrait is the teacher of what is to be the portrait in photography. First of all a photographer must learn to direct our eyes to certain parts of the picture and emphasize them in the degree he intends, and he must control all other parts so that they will take their place.

Second, we must learn to have our figures rest in the picture-frame and attain stability, thereby escaping the appearance of being forcefully detained. Third, our photographic texture must be changed, or rather it must be varied, that we may more fully feel the different qualities of flesh, wood, dress-goods, atmosphere, etc. Movement is not a characteristic of portrait-photography. All things seem arrested in our process, yet we must strive for and get movement. This can be done by manipulating the plate.

We now know that it is possible to make on the plate by photographic processes, any kind of black lines or shadings, white lines and gradations. By this means it is possible for us to accent any part of a picture, to bring out or to cause to recede whatever we like. With such means at our disposal who would not feel a new ambition in our photo-portraiture, in which we are witnessing this development! However, enthusiasm and confidence must not blind us to the extent that we begin experimenting wildly. I believe photography's growth will be along conservative lines. The good photographic likeness that is made to-day will continue to be the base but we shall deviate from it to the extent of making slight alterations to secure the foil to the face, to regulate the over-charged interest in which all photographic-portraits are at fault.

This change will in course of time suggest other modifica-

tions of straight photography, such as the slight toning of the hands or linen. Later, outlines of a coat or other form may be made heavier to relieve over-charged interest on the face, or, to effect a similar result, we may soften outlines into the tone of the background. After a time, the backgrounds may be made to have more depth and a more broken texture. Then, we may attempt to construct a background and so gradually we may grow in power to create a portrait.

Though the "Art Principles in Portrait Photography" recommends the use of very plain screen backgrounds, it will not be necessary for a master to confine himself to such, because a man of invention may control any kind of ground that comes in "just right."

The chief points to be kept in mind are that photography of to-day suffers from over-emphasis of the face, from unremitting backgrounds, from lack of picture-balance and from a feeble portrait intention. All these things can be remedied when we understand the art foundation.



STRATFORD-ON-AVON CHURCH.

R. S. BRUCE.



Fig. 3. Cerussite (N. S. W.)



Fig. 5. Pink beryl group with lithia, mica and tourmaline(So. Cal.)

ILLUSTRATING "MINERAL PHOTOGRAPHY."




A BRITTANY WELL.

Mrs. J. E. Bennett.

MINERAL PHOTOGRAPHY.

By L. P. GRATACAP.

HOTOGRAPHY has accompanied man in almost every avenue of research. It has even performed an excellent service in psychology where, as in a realm of thought and emotion, it might hardly have been suspected of application. In the photographs of expression, abnormal facial states, of definite mental defects associated with physical features, photography has played a useful part. And it advances; methods improve and more and more skillful results are exhibited. Certainly in its artistic aspect the wonderful progress recorded in the last twenty-five years unfailingly shows how the operator becomes an artist. Delicacy and beauty, rich meanings and refined values of light and shade have been secured, its technique passing into the higher realm of artistry and composition.

How invaluable to science photography is: how in geography and travel its most obvious use has replaced the grotesquely misleading pictures of former days which were hand-made and served more to gratify the vanity of the illustrator than to inform the reader. In palæontology, in botany, in all branches of natural history its amazing power has been revealed. Since the invention of rapid plates and lightning shutters photography has conducted the investigator into new fields and in some cases, perhaps, has substituted its own harmless ordinance for the rapine of the rifle and the shotgun. What vast utility—which in its consequences assumes almost majestic proportions—has it not compassed in astronomy.

It is a pleasant problem to discover where photography—if applicable at all—has not been helpful. In the mineral world there are temptations for the photographer and there are conquests to be made. To make a successful picture of crystals, to portray the fine needle structure of some zeolites to give character and definition to a specimen holding two or

three different minerals, to reveal the enclosures of transparent crystals, to make a mineral species speak from the picture of itself are tasks more easily discerned than solved, more easily bungled than finished. The writer responds to the kind invitation of the editor to contribute something to the ANNUAL, more from a desire to point out a field of work not yet adequately covered than from any conviction of his own that he has in this direction done any good work himself.

Some time ago he induced his assistant, Mr. Milton G. Smith, to undertake some experiments, and the results, chosen from a large number, are here shown. They are attractive, but it is quite incontestable that they could be excelled. Mr. Smith developed with ortol. He used appropriate backgrounds and manipulated the light. In this respect much of the secret doubtless lies. The possession of a room with many windows, the use of reflectors, the careful adjustment of the specimens to the light, a perfect control of the light by shades all go towards helping out, in fact are the indispensable adjuncts of successful photographs of minerals. And then the *lens*! There indeed is the *deus ex machina* of the whole business. The lens *must have depth of focus and definition* for at all commensurate work. This has been demonstrated over and over again, and Mr. Smith's equipment in this respect was not altogether adequate.

Some excellent photographs of minerals have been made under the direction of F. A. Canfield, the collector and mineralogist of Dover, N. J., and they were made with a superior lens. Ordinary lenses are of course greatly assisted by "stopping down" and long exposure, though in the latter respect gypsums, apophyllites, quartzes, and, generally, white and translucent or transparent minerals must not be too carelessly treated.

As I have before insisted a wide range of selection is offered in mineralogy of subjects, and more so than in almost any other branch of natural history since the variations of excellence in specimens is indefinite. It would be folly to waste time over poor specimens. But on the other hand the quality of some species is never high, and many have no photographic availability at all. One would like to see an album made up of quartzes and calcites, another of the zeolites, another of

fluors, and in this last case it would be interesting to have Mr. Dugmore try color plates of minerals. If his success should be as startling as that achieved with shells there would be "prolonged applause." Then again the dark and opaque minerals as the pyroxenes, amphiboles, zircons, willemite, wernerite, tourmaline, all of which form strong crystalline and rather simple outlines would make a contrasted and capital group. The gem minerals as topaz, beryl, corundum, offer attractive subjects, and invite the use of color plates.

In printing negatives of minerals by far the best results are attained by the use of silver papers or glossy velox; the detail is of course indispensable and it is secured on these papers. Surface markings, the pits, erosion or etched faces, wrinklins, truncations, inclusions, all the numerous minute features of a mineral deserve attention, and, if caught, greatly enrich and improve the picture. I have seen a fair photograph of *Natrolite*, which is an acicular mineral forming frequently delicate tufts, like small pincushions, bristling with its emergent needles, printed on dull velox paper, and the cushiony features became simply white spots, characterless and unmeaning. The same negative printed on glossy velox showed the delicate hairs radiately pushed out from the light background, an altogether different and a very serviceable effect. And yet—one never can tell! Just after recommending above a universal application of glossy velox for mineral prints I find that the quality of some negatives demands its rejection. To acquire a just realization of what paper to use for a negative perhaps nothing does but experiment. And yet generally a negative of detail will have its beauties best exhibited in mineralogical studies on glossy velox or silver papers properly toned.

As regards the subjects presented with this short notice, Fig. 1 fairly well shows a glistening black heap of crystals of *hematite*, opaque and simply lustrous, upon a rock fragment of quartz crystals (out of focus). Fig. 2 shows a series of geniculated rutiles, those exquisite twinning groups which may form a closed polygon, or (as in the example on the lower left hand corner) a succession of elbow joints. A more searching lens would have improved this result. Fig. 3 is attractive and is printed on a half-tone velox. The effect

of this in the velox print is immensely heightened by holding it against the light, letting the light enter it and give it relief. But the picture is quite unable to produce the exact effect of the original specimen. That is a spherical surface covered over with projecting twin crystals which intersect or unite in leaf-like sheets, of a wonderful beauty. The lens here again has failed in individualization and depth. The result is sensibly abortive. The specimen would offer a good crucial test to a fine instrument. Fig. 4 offers much less difficulty, and

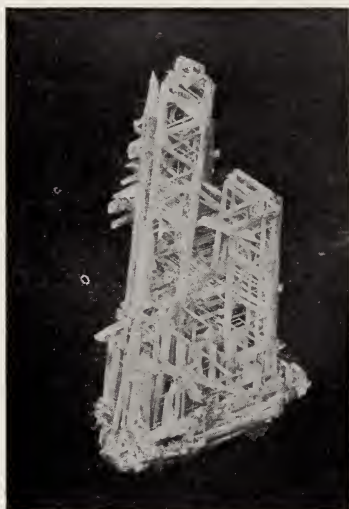


Fig. 4. Cerussite: truss form (N. S. W.).



Fig. 1. Hematite rosette (Switz.).

naturally elicits attention from the beautiful reticulation it exhibits. It is a carbonate of lead of unusual perfection. Fig. 5 shows a group of pink translucent beryls impacted in a mass of lithia, mica, and tourmaline. The faces and edges are here detailed with some skill.

The above examples scarcely do more than call attention to a very wide field of photographic experimentation, which while occupied, in a measure, might tempt fastidious operators to enter it as, to them, an untried and novel area of effort.

Scientific requirements compel the photographer to introduce some sort of a scale by which the original size of the specimen, unless of natural size in the photograph, can be deduced. It is customary to use an inch rule or just one inch

mark, but a very ingenious and adequate plan was devised and utilized by Mr. F. A. Canfield in his excellent work. He secured a steel ball of exactly one inch in diameter, and placing this at the base of the specimen photographed, secured an almost absolutely trustworthy result, the steel ball being easily manipulated and not readily displaced or shifted.

There is another consideration which occurs to me, though it would naturally suggest itself to any practical photographer, especially those engaged in the reproduction of "still life," and



Fig. 2. Rutile: elbow form (Penna.)

that is the control of the high lights. Minerals have glossy, very lustrous, surfaces and if too much light is admitted halation over these surfaces takes place, and the prints are spotted, unreal, and worthless. It is quite usually found therefore that the diffused light of even dull days works advantageously. The chaotic reflections from such faces in minerals obscure and break the edges of the crystals while they greatly interfere with the penetration of the lens into the cavities. There are, on the other hand, dull surfaces of minerals, absorbent colors, and the use of artificially directed light, as with small hand mirrors and where interior districts are to be illuminated, can be usefully invoked.



R. DÜHRKOOP.



THE GYPSY GIRL.

R. E. WEEKS.



RUNNING AWAY FROM MAMMA.

MRS. W. W. PEARCE.



THE WOOD ENGRAVER.

GEORGE D. FIRMIN.

SCHOOL CAMERA CLUBS.

By GEORGE D. FIRMIN.

IN presenting to the ANNUAL The School Camera Club, I realize that, to most, the subject is unfamiliar; but I trust that what I may say will encourage photographers in general to take a little more personal interest in these little societies which are now a part of every well equipped school. Most of us are busy men and those not in the teaching profession may find it difficult to give much time to these young people who are literally working in the dark. One will be amply repaid for any trouble or effort in behalf of the pupils of the schools. To be sure many teachers now-a-days dabble in

photography and they can be of great assistance to their pupils. Unfortunately modern mechanical methods and lack of time cause these busy teachers to overlook or ignore the fundamentals which the photographer and artist quite properly consider necessary to thorough work.



CHAS. C. WHITMAK.

How may we help the boys and girls It has been my privilege and pleasure to come in close touch with the camera club of the Philadelphia Northeast Manual Training High School (quite a name, isn't it?). This club has been in ex-

istence several years. Its purpose is to help students photographically inclined. Any member of the school may join. An exhibition of the work of members is held in June of each year. Prizes, usually ribbons, are awarded the best pictures. During the year instruction is given in development, various printing processes, lantern-slide making, bromide enlarging



"GOLDEN ROD."

GEORGE D. FIRMIN.

and the making of enlarged negatives. While a club affair and not in the school curriculum this work is under the direct supervision of the Professor of Chemistry. Other instructors willingly lend a helping hand; so we have lectures on optics, general science and art. The Forestry Club and the Camera Club find that they can work together very nicely. This as-

sistance from so many apparently unlike departments helps not only in photography but also in correlating the general school work of the student.

When the boys enter the school those interested in camera work are requested to bring examples of their work, privately, to me for criticism. A great deal of care is necessary here or the boy may be discouraged and give up altogether. Some of the prints submitted seem hopeless, still I try to find some redeeming feature before making suggestions as how they might be improved and how to do better work next time. Most boys take very kindly to these criticisms. I try to persuade them not to change anything because I say so but because they see that the suggestion is an improvement. They are not told "This would be better, etc." The form is more apt to be "Don't you think that possibly this might improve, etc." That usually starts a flood of suggestions from the boy himself.

The two young men whose photographs accompany this article have worked with me faithfully for something over two years. While accepting my criticisms favorable and unfavorable in the spirit in which they were given, they have retained their individuality. They have ideas of their own and these show in their work. They have learned much more than the mere technique of development and printing. They have gone far towards learning the value of "exclusion"—something of proper balance and much of appropriate mounting—a most important thing—too often neglected.



WALTER S. CROWELL.

PHOTOGRAPHY AT NIGHT.

By HAROLD MORTIMER-LAMB.



PART altogether from the attraction photography has for me as a medium for artistic expression, there is the added charm of the opportunity it affords in the directions of experiment and research. The only drawback to this is that the beginner is prone to take injudicious advantage of his facilities in this regard and before thoroughly mastering one branch of the art photographic, or perfecting himself even in the fundamentals of development and the simpler methods of print-making proceeds forthwith to try his prentice hand at glycerine-controlled platinum, gum-bichromate, or carbon printing—usually with very dire and disappointing results.

At least that has been my own sad experience in the past, wherein I demonstrated to myself most convincingly the truth of the adage which refers to the temerity of fools in contradistinction to the prudent reserve exercised by angels. Well, it is just a question after all whether the fools are altogether to be condemned for the enthusiasm which leads them astray. Don't they at any rate derive lots of amusement and interest from their little experimental flights, and so long as we are not invited to admire their weirdly crude initial efforts, who are we to deny them harmless pleasure, however seemingly futile? Certainly not I. And so I propose in the present brief article to go to the other extreme and in writing of some experimental exposures made at night, suggest that here lies another field wherein the beginner may pass many a pleasant hour and waste plates innumerable, to the great stimulation of trade; while I am not sure that the advanced pictorial worker who has not yet attempted out-of-door work at night, may not get a hint or two from hearing of my rather spasmodic efforts in this direction.

I was first tempted to expose a plate by the light of the

moon one night the winter before last. I arrived home late, somewhere about eleven o'clock; and on my way I passed a little solitary cottage. A light was shining in a window, and this alone suggested warmth and comfort. The rest was dreary and cold. The full moon shed its clear, blue radiance over a snow covered earth, a cold wind blew, and one thought of the joy of the tired traveller as he approached this humble abode with the beacon light shining, a promise of the welcome awaiting him. So upon arriving home I got out my whole-plate camera and fitted to it an old-type Ross single landscape lens of long focus, from which I had removed the original mount made with a view to stopping down the lens and giving fine definition—a much too critical definition for my requirements—and then retraced my steps to the neighborhood of the lone cottage.

After adjusting the camera and focusing on the light in the window, it suddenly occurred to me that to properly carry out the idea of my first impression, I should require a model to pose for the figure hurrying homeward. Well, I was quite aware that there would be difficulties in the way of finding anyone good-natured enough to leave a comfortable bed to enable me to photograph them at midnight in wintry weather; so there was nothing for it but that I should be my own model. That point once decided, I marked as well as I could the position the figure should occupy to secure a more or less well-balanced arrangement, and then placing my walking-stick so that it stood erect in the snow at that spot, again examined the composition in the ground-glass to make sure that all was well as possible. I next inserted the plate-holder, removed the slide and quickly got into position, pulling my slouch hat over my ears and crouching my shoulders to carry out the suggestion of a man who feels acutely the biting frost. As a matter of fact I entered thoroughly and appreciatively into the part, for the thermometer stood at ten below zero and after standing stock still for five minutes, the limit of endurance, there was no mere acting about my pose. Hence I was not a little pleased when the ordeal was over and half an hour later discovered in the dark-room that I had a printable negative for my pains,—very thin, it is true, but one capable of yielding a print that would convey in a measure my con-

ception of the scene. The result is shown in the illustration here reproduced.

Pictorially considered, it is perhaps disappointing, for the figure and the cottage are scarcely connected, and the general effect is, consequently rather "spotty"—one little man, one little house, one little lamp-lit window. But nevertheless the experiment succeeded in that I proved to my own satisfaction that with a lens working at about F6, it is possible to



No. 1. THE LIGHT IN THE WINDOW.

H. MORTIMER-LAMB.

take a satisfactory photograph by direct moonlight, assisted by the reflection of snow on the ground, with an exposure as short as five minutes.

In reference to this particular exposure here are a few more working details: Plate, Imperial Sovereign (backed); developer, pyro-soda diluted to half strength; printed on Eastman water-developed platinum. Of course, a much more contrasty print might be obtained by using a gaslight paper, such as Velox; but in this case I did not want more contrast than platinum would give me.

Since this first attempt I have made several other experiments along the same lines and I find that one may photograph

even street scenes by lunar light, provided one avoids including arc lamps in the view, as these cause bothersome halation. Often the big solemn masses of public buildings or churches appear very lovely—much more lovely than they ever do by day—under the soft light of the moon, and, especially in winter, they frequently afford fine subjects for pictorial treatment.

The longest exposure I have given on subjects of this nature is half an hour and then only when it has been thought necessary to secure reasonable detail in the shadows; but, hitherto I have only attempted lunar photography when I had the aid of snow to act as a reflector. One word of warning to the tyro, in passing. It is obviously hopeless to think of including the moon herself in one's night pictures, for the longest exposure possible by which one may obtain an unblurred image of the earth's gentle satellite is seven seconds, and this, of course, is all too short for the registration of other objects. I have, however, made tele-photographs of the moon, giving this relatively short exposure on a separate plate and afterwards used the negative for the purposes of combination printing; but, except as an exercise, it is questionable whether the game is worth the candle.

At the moment of penning these notes, the temperature instead of being below zero, is somewhere round the nineties, and as there is consequently no immediate prospect of snow, which I find so useful an auxiliary to night work in the winter season, I have recently attempted landscape photography at night—it being then a cooler and more pleasurable exercise than during the heat of the day—employing now flashlights for illumination. My success so far has been extremely modest and hence I am unfortunately unable to fittingly point my moral and adorn my tale; but I nevertheless suggest experimentation in this direction as offering great potentialities.

Have you observed how glorious the woods are just as twilight is falling into the arms of night of a summer evening? All the distracting reflections from the sky on leaves and twigs and grass—beautiful though they too may be—seen earlier in the day are now no longer discernible. One now looks on Nature with eyes at "F4." Before us are great solemn, ghostly forms shrouded in mystery, suggestive, conducive to



PORTRAIT.

J. Edward B. Greene.

poetical imaginings. Emerging from the gloom are weird twisted shapes of tree trunks and branches like limbs outstretched, and beyond an impenetrable depth of shadow. This



PORTRAIT STUDY.

H. MORTIMER-LAMB.

is a new world and we people it with spirits flitting through the dark. How the illusion grows as we listen to the song and soft sighing of the wind as it kisses the rustling leaves

overhead. Knowing how few painters can give a faithful rendering of night, its solemnity, beauty and mystery, it seems almost impertinent to hope that photography may be more successful. Yet the attempt is worth while, if only that photographers may come to love Nature more after studying her in, what is to me at least, her serenest and most entrancing aspect.

The mode of procedure I have adopted is to go to the woods about one hour before dusk and look for a possible subject. One has then sufficient light for focusing comfortably and may, moreover, decide how the flash shall be directed in order to give special emphasis where required. It might, perhaps, be a good plan to make a fairly long exposure before the darkness quite falls, so as to secure just so much detail all over the plate as thought advisable and then complete the exposure by a flash that would emphasize the chief point of interest. But the difficulty here it seems to me would be in correctly gauging the preliminary exposure that the effect of night-fall would be preserved. On the only occasion I followed this method I fell into the error of over-exposure, the result being a flat, uninteresting negative which I threw away in disgust.

The second print (unfortunately not reproduceable—Editor), was from a plate exposed at ten o'clock at night, at which time it was just possible to make out through the enveloping gloom the graceful lines of the white birch trees against the background of dark foliage. I focused by lighting a candle which was placed on a convenient root at what I judged would be about the right distance under the circumstances. Then leaving the lens, a Dallmeyer Rapid Rectilinear working at F8., open at full aperture, I exposed my plate by blowing magnesium powder through an alcohol lamp, and moving from place to place, outside, of course, the area embraced by the lens, in order to give more or less illumination to different objects in the view as I considered necessary. In all I believe I gave four flashes; two immediately behind the camera, first holding the lamp high above my head for the tree forms nearby, and then low down to light the ground and show the roots of the trees; and the third and fourth lesser flashes at some fifteen yards in front of the

camera on either side so as to sufficiently illuminate the middle distance. Here again, the result was pictorially unsatisfactory. But my object is simply to suggest to others a new line of work which if patiently followed may afford attractive results, while the endeavor itself will be productive of keen enjoyment.



JONQUILS.

JAMES THOMSON.



MADISON SQUARE GARDEN, N. Y.



DR. PARKHURST'S OLD CHURCH. F. M. INGALLS.



In Central Park, N. Y. (No. 3.) (No. 2).

F. M. INGALLS.

PHOTOGRAPHING IN CENTRAL PARK.

By FRANK M. INGALLS.

CENTRAL PARK, located in the very heart of Manhattan, is a delightful spot in summer time, with its refreshing carpet of green contrasting with the dirty streets which surround it. It occupies the space of 153 city blocks,—an area of 840 acres. It is bounded by Fifth avenue, 110th street, Eighth avenue and 59th street. Within its limits are about nine miles of carriage drives, about 6 miles of bridle paths and almost 30 miles of foot-walks. These all wind in graceful curves, and are shaded by beautiful trees of various species, with many flowering shrubs planted along the borders. Here and there statues and fountains nestle in the foliage. Many of the foot-walks lead through beautiful vine-covered arbors, which contain seats where one may rest and feast his eyes upon the works of nature and art. In many places ponds and lakes

add to the enchantment of the place. Seats for about 10,000 persons line the walks.

To describe all the interesting features of this park would take a large volume. Just a few hints for the camera workers will suffice for my purpose.

At the principal entrance, 59th street and Fifth avenue, is conspicuously placed the bronze equestrian statue of Gen. William Tecumseh Sherman. It is a massive piece of work in gold bronze, placed high upon a solid granite base, located in a little plot of green grass, surrounded by a curb.

Upon entering the park, the path that leads down to the left, past the swan-boat landing, up a few stone steps and a little climb to the top of a huge boulder, will give us a point of sight that is well worth the trouble. Beneath us lies the "lower lake" surrounded by beautiful trees and beyond we get a glimpse of the tall buildings on Fifth avenue, including the Netherland and Savoy hotels.

Should we have chosen to take the path at the right we would have come upon a scene no less beautiful—the little ivy-covered stone bridge which spans a narrow arm of the same lake. As we adjust the camera to take the picture, a stranger strolls into our field of view, and we hasten to immortalize him as his gaze directs our attention to the little swan-boat that has just emerged from under the bridge.

We follow along toward the north, drinking in the views and wishing we had nothing to do but to stroll all over this beautiful world, depicting its places of interest that others might enjoy the things that we admire.

Should we be inclined to study architecture here is an excellent opportunity. Just across Fifth avenue some of the most beautiful residences in America, seen from the park form many interesting vistas.

The laughter of children is heard and soon we see a pony with rider coming down the walk. We prepare for a snapshot at close range. There are also a number of donkeys and goat-carts for children to ride in upon the Mall which they enjoy very much. Turning to the left we soon come upon the building of the Metropolitan Museum of Art, at 82d street and Fifth avenue, the largest and richest art museum in America. The city furnishes the buildings but the col-

lections therein are controlled by private interests. One should not try to see all of the collection at a single trip but plan a series of visits, taking only a few sections at a time. The building is open every day, admission being free except Mondays and Fridays when a small fee is required. It is open on the latter evenings, and is then free, from 8 to 10 o'clock. It is an excellent place to study art—especially on rainy days when we cannot enjoy out-of-doors life.



In Central Park, N. Y. (No. 1.)



(No. 4.)

F. M. INGALLS

Just south of the museum building, on a little rise of ground is placed the Obelisk or "Cleopatra's Needle," the most interesting historical object to be seen in America. It consists of a monolith of hard stone measuring about eight feet square at its base and seventy feet in height. It was old when Moses read its inscription. It has behind it thirty-five centuries. It withstood the various climatic changes during all this long period, until brought here where the northeast storms have worn the hieroglyphics from two of its sides. A gold-plated cap has been placed upon its apex to protect it. In 1877 it was presented to the United States by the Khedive of Egypt, and removed here at private expense. Its companion was located on the Thames Embankment in London, the same year.

Farther to the south is Croton reservoir, supplying a part of the water used in New York city. At its southeast corner is an odd little stone tower. A fine view of the surrounding locality may be obtained from its upper floors. It is open at all times—free for all. The gate on Eighth avenue, or “Central Park West” as it is called in the vicinity of the park, is near the elevated station of the Sixth avenue and Ninth avenue lines, at 81st street and affords a fine view.

When the great park has been exhausted, one may turn to the smaller city parks or “squares” with their pictorial opportunities. One of the most favored of these is Madison Square Park, almost in the heart of the city. Two views of its chief features are here reproduced, the “Garden” with its beautiful tower, and Dr. Parkhurst’s old church, recently removed to make room for the tallest building in the world, a business block of forty-four stories in height.



SPRINGTIME.

J. L. ROSENBERGER.



A VENETIAN PALACE.

Mrs. Eleanor W. Willard.



A VENETIAN PALACE.

Mrs. Eleanor W. Willard.



THE BIG DOLLY.

MRS. J. E. BENNETT.



THE GOLDEN POPPY (No. 1).

O. V. LANGE.

THE VERSATILITY OF PHOTOGRAPHY.

By O. V. LANGE.



WITH a few studies of wild flowers of California I will endeavor to illustrate some of my professional experience, when trying to correlate in floral compositions the idealism of the artist and the realism of the scientist.

In the majority of cases it is like trying to mix oil and water, for the scientist demands uncompromising and minute detail. To get these we must use a rather flat front light, an abnormally small diaphragm, with the subject against a plain expressionless background. He wants to *see* and be able to analyze every filament, vein and stamen, etc., in the reproduction.

This, then, is the truth for the realist.

To the artist, on the other hand, this is all a painful superfluity of useless detail. He only asks for simple impressions of the salient characteristics of the flowers, thus leaving much for his imagination to revel in. He prefers to *feel* the facts of beauty, rather than have them crudely visible.

This, then, is the truth for the idealist.

It has always been marvelous to me, when I contemplate that photography can so readily satisfy the demands of these two extremes, thus proving its great versatility.

In study No. 1 I have tried to preserve the freedom and abandon that are so appealing in the lines and curves of the California Golden Poppy. The background has been carefully studied so as to get a rendering of subtle gradations in tone-values, thus giving the feeling that they are nodding and bending freely in the atmosphere. These last attentions satisfy the desires of the artist, and still are not objectionable to the scientist.

In study No. 2 we have the Mojave Desert Poppy, a distant relative of the Golden Poppy. The hard woody stem, the lobed, stiff, leathery leaves, and four-petaled flowers of this wild plant forbid the expression of much more than a mere scientific fact.

Now the man of science does not necessarily dislike artistic embellishments, providing they do not obliterate any of the (to him) valuable details. Therefore to gratify the esthetic taste, three stems were so arranged that a pleasing balance of



THE MOJAVE DESERT
POPPY (No. 2).

O. V. LANGE.

lines would result in a rich and fully satisfactory composition. The lighting was entirely from the side, and so subdued that at least some degree of mystery and sentiment might be infused into the study, without sacrificing any of the desirable features, such as rendering the true texture of the lobed leaves,

and showing the stamens standing upright in their golden cups.

Study No. 3 is of a wild lily found abundantly both in the California Coast Range and the high Sierras. To express the feeling of graceful freedom possessed by these wild beauties, has been to me more a labor of love than of stern neces-



LILIUM WASHINGTONIA (No. 3).

O. V. LANGE.

sity. Therefore I almost defied the requirements of cold botanical facts exacted by my scientific friend.

These flowers, of waxy texture and delicate cream tint, have almost leafless stems, which had to be intersected at various

places to relieve the monotony of a succession of straight lines. Placing them at a slight angle, the feeling is secured as when being swayed by a gentle breeze.

These lilies being of uniform color-value, the lighting was of an entirely different scheme than in the preceding study. Here variety, and incidentally sentiment, were secured by directing the light so that each one would be endowed with a different tone-value. The illusion of their being at various planes of distance from the spectator is accomplished by the light ones being brought forward against the darker part of the background, and the subdued ones are seemingly sent back by being placed where the background is of a lighter gray. This illusion is also enhanced by the darker ones being less in focus than the others.

In these few flower studies, selected from many others, it has been my endeavor to blend scientific accuracy and artistic abandon, more or less, into a happy medium; thus seemingly proving the versatility of photography, that can so nearly satisfy the demands of these two extremes.



THE OLD FIREPLACE.

A. B. STEBBINS.



THE LACE CAP.

HELEN P. GATCH.



WADING.

MISS JEAN M. HUTCHINSON.



SHADOWS.

G. K. Muntz.



W. E. BERTLING
EARLY MORNING.

W. E. BERTLING.



A SMASHED FINGER.

H. B. CONYERS.



Machine stopeing 1000 ft. underground.

J. W. READ.

UNDERGROUND PHOTOGRAPHY.

By J. WILBUR READ.

PHOTOGRAPHERS have told us how to do general work, architectural and landscape pictures, home portraiture, wild animal photography and have left the surface of the earth to ascend heavenwards and use a camera in a balloon. But never have I seen anything in print, showing how the camera fiend would handle his box if he left daylight behind and started on a trip towards hell, which the preacher of a generation or two ago told us lay down below, heaven being up above. Instead of working upwards in a balloon, I have travelled in the opposite direction in the gold mines of the Transvaal where I have secured some good pictures from 500 to 2,000 feet below the grass roots.

And now we will go below. It is seven o'clock in the morning and the day shift is going to work. We are on hand,

dressed in old clothes and wearing a pair of hobnailed shoes, weighing about four pounds each. I used a 5 x 7 No. 6 Premo, fitted with an Aldis Anastigmatic lens, and have a decided preference for Kodoid plates for flashlight work underground. They weigh less than glass, and in case of accidents, such as occasionally happen when apparatus takes a tumble down a steep slope, they are unbreakable. In addition to a camera and six plate holders I have a blow-through flash lamp, magnesium powder and wire, methylated spirit and acetylene lamp, the latter being used in lieu of candles to enable me to see my way around.

But the men are all down and the cage is waiting for us. I go down last with the shift boss whose duty it is to travel all over the mine (if it is a big one he has a certain section to cover) and inspect the work of every man under him. Naturally it is easier to go down hill than up, so he has the cage stopped at the first level on which work is being done and out we climb at the station. This is a fair sized chamber alongside the shaft where the ore is loaded into the skips to be hauled to the surface.

"The Reef," as it is termed, is a layer of gold-bearing rock of low grade. It varies in thickness from a few inches to twenty feet, the average being somewhere around three or four feet. Around Johannesburg the dip downwards is slight, but at Randfontein, the western end of the Witwatersrand 30 miles from town, it lies at an angle of 80 or 90 degrees, which means that it isn't the easiest thing in the world to get about.

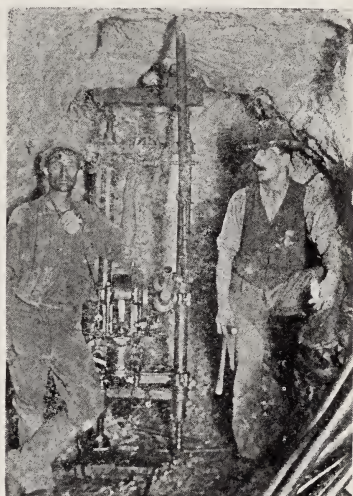
Running off from the station are drives going east and west. A drive is nothing more nor less than a tunnel, enabling one to travel about. The foot wall, or floor, has a track laid upon it, along which the Kaffir or Chinese boys train the ore from the stopes to the station. It behooves one to keep their eyes open, for often the hanging wall (or ceiling) is so low that, paradoxical though it seem, any number of stars can be seen way down below the grass roots.

But here is a stope and the tap, tap, of a machine tells us that work is going on there, so down we go to hunt up the miner who "bosses up" two machines, each of which has two Kaffir boys at work on it. A stope, remember, is an underground

chamber which has been made by the removal of the gold bearing rock. Off in the distance glimmer the candles of the men at work, and we make our way towards them with no little difficulty, for the reef is narrow here and this stope is only about three feet high, so one must do practically as the serpent did after it tempted Eve, and literally crawl on our bellies. As we progress the stope grows higher and when we reach the machine we have been making for, we find it is six feet high.



Driving



Diamond Drill.

J. W. READ.

Setting up the camera it is leveled off, and the picture is focussed on candles, top, bottom, right and left sides being obtained in the same way. Pouring a little methylated spirit on the wick of our flash lamp it is charged with about a teaspoonful of magnesium powder, and the spirit lighted. Then we burn a strip of magnesium ribbon to accustom the eyes of the miner and his boys to the light, then uncap the lens and fire the lamp. After packing up we go on down the stope and climb out on the next level, 100 feet below the one we left above us. Along it we travel until we come to the end of it where we find a man engaged in "driving." This means he is running the level along the reef so that all portions of it belonging to the mine can be got at on this level. Here is

where it is dead easy to rig up the camera, for we are on level ground, and the "hanging" is usually six feet above the foot walk, so one can easily stand erect. But right here is where picture making is difficult, for the ventilation is poor and the dust from the machine makes things look pretty foggy. But mister miner stops his machine and we wait a bit until the atmosphere clears up when we have a go at him and so obtain a picture of a machine at work in a drive.



HAND STOPEING.

J. W. READ.

Turning back we start towards the station on this level and eventually bump into a gang of "hammer boys" at work starting a stope downwards. There is no machine here, but instead a lot of Kaffirs, each one of whom is hard at work with hammer and drill making a hole, that when loaded with dynamite and fired will bring down the ore containing the yellow metal which will buy anything in the world from a man's honor to a woman's virtue. Again we rig up our camera and burn some more powder, the result being a good picture.

And so we tramp on, passing Kaffirs pushing truck loads of ore from the ore boxes at the bottom of the stopes to the station where it is dumped into ore bins preparatory to being hauled to the surface.

Down from one level to another we go through the stopes until we reach the bottom of the vertical shaft. Rambling around on this level we stumble on a diamond drill at work hunting for the reef which has been lost here. Another flash light exposure yields a picture of the drill with the shift boss on one side with his prospector's pick in his hand, and a Boer miner on the other side.

Thence back we go, past the station, and find that an inclined shaft has been sunk here. At the top of it is an electric hoist, and another flash yields a picture of it with the engine driver and his "boy" apparently hard at work.

But it is close onto four o'clock. All the holes have been charged up and it is time to get back to the station before blasting commences, for we don't want to take any chances on "getting blasted" by running onto a charge accidentally and we don't want to get "gassed" by breathing a lot of dynamite smoke. The cage comes down soon after we reach the station, and in we climb preparatory to being hauled up to the surface where old Sol in all his glory, shines out of the western sky.



"JUST KIDS."

HENRY HALL.



A WINTER SEA.

F. J. MORTIMER.



THE TWO DOGS.

O. C. CONKLING.

PRINT CIRCULATING SOCIETIES.

By C. W. CANFIELD.

(Editor of the American Annual, 1887-1891.)

PHOTOGRAPHERS are a queer lot "except thee and me, Betsy—and thee is often a bit queer." It would seem the most natural thing in the world for a number of them even in scattered localities, to "get together" for mutual benefit and the comparing of notes and results, especially through the obvious medium of circulating collections of their pictures. But a diligent combing of records shows the present existence, in these United States, of only four societies along this line. "*Pour encourager les autres,*" as well as in recognition of these devoted pioneers, the editor has thought it fitting to give some account of them here.

It may not be amiss to set down as a preliminary, the editor's impressions concerning a few of the pros and cons which experience has developed as bearing on the subject. And the "cons" come first, naturally.



THE PET ANGORA.

LOUIS FLECKENSTEIN.

In the first place, the motives which impel toward photographic expression are so varied. For the vast majority, the amusement and occupation derived from dabbling in photography are a quite sufficient end and aim—and criticism,

which is so often made an excuse for fault-finding—is not desired. Would that our strenuous executive at Washington could codify the laws defining a sense of humor, so that a



NARCISSUS.

HELEN W. COOKE.

standard might be created; it would certainly affect the spirit of the note-books that go the rounds with the albums and portfolios now in circulation! The comments are so trite or so perfunctory that they cause pain rather than pleasure to



A DAUGHTER OF THE NILE.

CLEO. S BOURGEOIS.

the judicious griever. Instances are not wanting where the tyro or a button-pusher graduates into as rampant a "Rebellionist" as any—with a capital "R" and a "why-drag-in-Velasquez" attitude; and proceeds to "flock by himself" if birds of a feather are wanting, disdaining earlier associations. But the pictures themselves should be interesting, aside from the comments—and they oftentimes are.

Then, again, the maintenance of interest means a lot of work for some leading spirit or two—and that is a detriment.

Finally, the wealth of technical publications, and of departments in general ones, offers great attractions and reaches larger audience.

Still, the personal quality of the association, often ripening into permanent friendships, and the great advantage of seeing original prints instead of copies, is a compensation devoutly to be wished, and should be a stimulus to the formation of many circulating societies in the near future—which will find full recognition in the ANNUAL.

The Postal Photographic Club—its full title adds "of the United States"—dates back to 1885, when the first album was issued on April 29th. The usual history of initial enthusiasm, temporarily waning interest, inaction and then revival, is chronicled in the archives of the earlier years; the present activity has, however, prevailed for several years, and seems likely to continue indefinitely.

Ten new monthly albums, prepared by the secretary, are circulated during the year, each member prepaying charges and forwarding to next on route list, after three days' inspection. A note book accompanies each album, in which particulars are given regarding the making of negatives and prints. Each recipient is expected to enter some criticism or appreciation in the note-book, regarding each print. This is rendered impersonal by withholding the name of the maker of the print, until the circuit has been completed, the secretary then adds this to the record and the album and note-book go the rounds a second time. After the final circuit, the albums become the property of the secretary. A vote for first and second in the two classes of Artistic Merit and Technique is also expected from each member, in respect of each album.

The membership is restricted to forty non-professionals, east of the Ohio River, and is at present filled, with a waiting list. The annual dues are three dollars; the forwarding charges which are by express, not post, amount to from three



AT SUNSET.

JAMES THOMSON.

to five dollars more. Prints are limited to 8 x 10 in size, and may be made by any but the blue-print process. They are forwarded to the secretary, who arranges them in the albums.

The present officers are Charles E. Fairman, President, and Gustavus A. Brandt, secretary and treasurer, both of Washington, D. C. Their services have been continuous for the past six years.

The Postal Camera Club was organized in 1900, the first album being dated October 10th of that year. The annual dues are fifty cents; the membership is limited to thirty amateurs. The prints are not sent to the director, to be arranged in albums, but are circulated loose in Portfolios, each member adding his contribution before passing the portfolio along, after three days for examination. The director sends out these portfolios, accompanied by an earlier one, and the usual notebook; presumably varying the routing so as to equalize the sensations and outlay of each recipient. The membership reaching from Vermont to Alabama, and as far as Colorado and California, was originally only twenty, but was increased to thirty by absorption of the Inter-State Postal Camera Club in 1904.

The present director is Mr. Henry W. Schonewolf, Albany, N. Y.

The Salon Club of America derives its title from the restriction of membership to workers, either amateurs or professionals, of record as exhibitors "in leading Salons." The prints are mounted by the maker, and circulated in portfolios. Exact figures regarding the membership are not at hand, but it is stated to be large, and subdivided into various local circuits, thus expediting the circulation.

The director is Mr. Louis Fleckenstein, Faribault, Minn.

The Elect Photo-Art Club was organized in May, 1903, and is limited to twelve select serious workers, having for its object mutual helpfulness, and aims to show none but worthy work. The criticism, while severe, is constructive and inspiring. The club motto is "Unity, Simplicity, Breadth."

The present membership includes, geographically, New England, New York and New Jersey, Maryland, Wisconsin and Michigan.

The monthly portfolio system is used, 14 x 18, and each member adds his contribution and critique before forwarding. The Portfolios make the rounds three times. The director is Charles E. Barr, Albion, Mich.

The particulars here given are derived from records furnished by the societies mentioned, communicated by Mr. Henry Hall, who has our thanks for his good will.

If any similar organizations have been overlooked, those interested will confer a favor by communicating with the Editor, so that notice may be given in future issues.



A HASTY RETREAT.

C. M. COOPER.



AT THE PARTY.

Charles M. Carter.



"IN FINE FRENZY."

F. J. MORTIMER.



PUEBLO DE TAOS, NEW MEXICO.

GEORGE L. BEAM.



SUPPER TIME.

C. F. CLARKE.



APRIL.

THEO. EITEL.

AMERICAN PHOTOGRAPHIC SOCIETIES.

This list is compiled from information received from an inquiry form addressed to over one hundred societies during the latter half of 1907. It indicates either a considerable decrease in the number of American societies, as recorded in previous volumes of the ANNUAL, or a lack of interest in not supplying the information desired. May we ask all secretaries of societies not here listed, to send us particulars of their societies, so that the list may be made fully representative of the amateur photographic societies of America.—EDITOR.

AKRON CAMERA CLUB—Akron, Ohio. Established 1890. Headquarters Y. M. C. A. Building. Membership, 56. Date of meetings, second and last Tuesday in each month. *President*, Wm. Spanton, 84 Bittman Street. *Secretary*, George F. Kunz, 100 Bittman Street. Date of annual exhibition, March or April.

AMATEUR PHOTOGRAPHIC ASSOCIATION—Selma, Ala. Established December 29, 1887. Headquarters, 916 Broad Street. Membership, 28. Date of meetings, first Friday each month. *President*, William S. Monk, Selma, Ala. *Vice-President*, S. A. Sexton. *Librarian*, Miss Mary Keipp. *Secretary*, E. Orlando Trippe, Selma, Ala.

AMERICAN INSTITUTE PHOTOGRAPHIC SECTION—New York City. Established March 26, 1859. Headquarters, 19-21 West 44th Street. *President*, Oscar G. Mason. *Vice-President*, Robert A. B. Dayton. *Treasurer*, James Y. Watkins. *Secretary*, John W. Bartlett, M.D., F.R.P.S. 149 West 94th Street. Stated meetings, first and third Tuesdays of each month. No meetings during summer months.

AMERICAN FEDERATION OF PHOTOGRAPHIC SOCIETIES—1120 Wood Street, Wilkensburg, Pa. *President*, R. L. Sleeth, Jr., Pittsburg; *Treasurer*, W. H. Phillips, East Liverpool, O.; *Secretary*, W. E. Strayer, Wilkensburg, Pa.

AMERICAN LANTERN SLIDE INTERCHANGE—New York. Principal office, 361 Broadway. Organized 1885. *General Manager*, F. C. Beach. Membership, 20 clubs. *Board of Managers*, F. C. Beach; New York; John P. Zenner, Buffalo, N. Y.; O. C. Reiter, Pittsburg, Pa.; H. R. Terhune, Orange, N. J.; Herbert F. Smith, Syracuse, N. Y. Annual meeting, December of each year.

BOSTON CAMERA CLUB—Boston, Mass. Established 1881. Incorporated 1886. Headquarters, 50 Bromfield Street. Membership, 120. Date of meetings, first Mondays. *President*, William R. Cabot, 141 Milk Street, Boston. *Secretary*, John H. Thurston, 50 Bromfield Street. Date of annual exhibition, spring.

BROCKTON CAMERA CLUB—Brockton, Mass. Established April, 1894. Headquarters, Arcade Building. Membership, 50. Date of meetings, third Friday each month. *President*, Wm. F. Bond, Avon, Mass. *Secretary*, George W. Higgins, 34 Commercial Street, Brockton. Date of meeting, third Friday each month. Date of annual exhibition, third week in April.

BROOKLYN CAMERA CLUB—Brooklyn, N. Y. Established February 2, 1900. Incorporated February 19, 1900. Headquarters, 776 Manhattan Avenue. Membership, 41. Date of meetings, first Wednesday each month. *President*, Wm. T. Knox, 279 Washington Street, New York. *Secretary*, U. Grant Dodson, 150 Noble Street, Brooklyn.

CALIFORNIA CAMERA CLUB—San Francisco, Cal. Established March 18, 1890. Incorporated April 5, 1890. Headquarters, 2206 Steiner Street, San Francisco. Membership, 454. Date of meeting, second Tuesday monthly. *President*, Albert LeBreton. *Secretary*, Edward G. Eisen, 2206 Steiner Street, San Francisco. Date of annual exhibition, no set time.

- CAMERA CLUB, Y. M. C. A.—Hyde Park, Mass. Membership, 30. Date of meeting, every Saturday evening. Annual exhibition in November. Hyde Park Cross Country Club merged into Y. M. C. A. Camera Club. *President*, W. E. Higbee. *Secretary*, F. R. Heustis. *Secretary*, John W. Logan, Y. M. C. A., Hyde Park Mass.
- "CAMERADS"—New Brunswick, N. J. Established April 24, 1890. Headquarters, corner Church and Neilson Streets. Membership, 12. *President*, George K. Parsell, George Street. *Secretary*, Harvey Iredell, D.D.S., Lock Box 34, New Brunswick.
- CAPITAL CAMERA CLUB—Washington, D. C. Established May 1, 1891. Headquarters, 1010 F Street, N. W. Membership, 80, limited to 100. Date of meetings, first Saturday in each month. *President*, P. H. Christie. *Secretary*, Dr. Andrew Stewart, The Rockingham, Washington. Date of annual exhibition, May.
- CAPE ANN CAMERA CLUB—119 Main Street, Gloucester. Established June 5, 1899. Incorporated December 26, 1903. Headquarters, 119 Main Street. Membership, 50 (limited to 50). Date of meetings, first and third Friday in month. *President*, Ernest L. Munger, Gloucester. *Secretary*, Herman W. Spooner, 6 Proctor Street, Gloucester. Date of annual exhibition, October 15th.
- CENTURY CAMERA CLUB—Erie, Pa. Established 1900. Headquarters, 622 State Street. Date of meetings, second and fourth Tuesday of each month. *President*, L. Clemens. *Secretary*, Gust. Holmquist, 2207 Poplar Street. Exhibitions, once a year.
- CHICAGO CAMERA CLUB—Chicago, Ill. Established, February 14, 1904. Incorporated February 19, 1904. Headquarters, Northwestern University Building, Dearborn and Lake Streets. Date of meetings, every Thursday. *President*, F. M. Tuckerman. *Secretary* and *Treasurer*, Clarence B. Hale, 215 Jackson Boulevard, Room 506. Annual exhibition, March (Salon).
- COLUMBIA PHOTOGRAPHIC SOCIETY—Philadelphia, Pa. Established, 1889. Incorporated July 3, 1894. Headquarters, 1811 North Broad Street, Philadelphia. Membership, 150. Date of meetings, first Monday of each month, business meeting; other Mondays, lecture or demonstrations. *President*, Frank D. Long, S. E. corner 12th and Berks Streets. *Secretary*, Herbert J. Karn, 2151 North 8th Street. Date of annual exhibition, January, prints; November, lantern slide.
- DAGUERRE CAMERA CLUB—Harbert, Mich. Established 1893. Headquarters, Harbert, Mich. Membership, 20. Date of meetings, first Monday of each month. *President*, F. Blish, Chicago. *Secretary*, Wells Sizer, Harbert.
- ELMIRA CAMERA CLUB—Elmira, N. Y. Established 1902. Headquarters, 112 Baldwin Street, Elmira, N. Y. Membership, 30. *President*, Maxwell Minier; *Secretary-Treasurer*, W. J. Wetmore.
- ESSEX CAMERA CLUB—Newark, N. J. Established April, 1901. Headquarters, 33 Court Street, Newark, N. J. Membership, 75. Date of meetings, fourth Tuesday of every month. *President*, J. McC. Morgan. *Secretary*, L. J. Gebhard, 235 So. 11th Street. Date of annual exhibition, January.
- HAMILTON SCIENTIFIC ASSOCIATION, CAMERA SECTION—Hamilton, Can. Established April, 1891. Headquarters, 104 King Street, W. Membership, 80. Date of meetings, second and fourth Mondays. *President*, Wm. Acheson, 165 Queen Street, S. *Secretary*, Sinclair G. Richardson, Traders' Bank Building, King Street, W. Date of annual exhibition, last week of October.
- HARTFORD CAMERA CLUB—Hartford, Conn. Membership, 100. Headquarters, Brown-Thomson Building. *Secretary*, B. A. Doane, care of *Hartford Times*, Hartford, Conn.
- HAVERHILL CAMERA CLUB—Haverhill, Mass. Established 1898. Headquarters, Daggett Building, Merrimack Street. Membership, 37 active; 1 honorary. Date of meetings, third Tuesday, monthly. *President*, H. L. Woods, *Secretary*, A. P. Heath, 105 Merrimack Street. Date of annual exhibition, no set date.
- HAWAII CAMERA CLUB—Honolulu, H. I. Organized, May, 1907. Headquarters, Kapiolani Building, Honolulu.
- INTERNATIONAL PHOTO PRINT EXCHANGE—Beach Bluff, Mass. Established in 1893. Membership, 20 (limited to that number), each member in a different country. *Secretary* and *Treasurer*, Walter Sprange, Beach Bluff, Mass.

- JAMESTOWN CAMERA CLUB**—Jamestown, N. Y. Established, 1907. Headquarters, Gifford Building, Jamestown, N. Y. Membership, 30. Meetings, second Tuesday of month. *President*, Miles C. Nichols; *Vice-President*, John M. Cushman; *Treasurer*, O. D. Starr; *Secretary*, John J. Andrews.
- METROPOLITAN CAMERA CLUB**—New York City. Established 1903. Incorporated 1904. Headquarters, 100-102 West 101st Street, New York. Membership, 150. Date of meetings, first Monday of each month. *President*, George L. Flick, 189 Franklin Street. *Secretary*, B. F. Woodburn, 102 West 101st Street. Date of annual exhibition, May.
- MISSOURI CAMERA CLUB**—St. Louis, Mo. Headquarters, Y. M. C. A. Building, St. Louis, Mo.
- MONTCLAIR CAMERA CLUB**—Montclair, N. J. Established November 10, 1898. Incorporated August 5, 1899. Headquarters, 460 Bloomfield Avenue. Membership, 65. Date of meetings, 10th of each month. *President*, Wm. B. Smith, 55 South Mountain Avenue. *Secretary*, C. Russell Jacobus, 550 Bloomfield Avenue. Date of annual exhibition next fall (date not fixed).
- MONTREAL AMATEUR ATHLETIC ASSOCIATION CAMERA CLUB**—Montreal, Canada. Headquarters, M. A. A. A. Building, 250 Peel Street. Organized, May 1, 1906. Membership, 40. Meetings monthly. *President*, G. A. Melville. *Hon. Secretary-Treasurer*, C. F. G. Johnson, 250 Peel Street, Montreal.
- NEW ENGLAND PHOTOGRAPHIC EXCHANGE MANAGING SOCIETY**—Ogdensburg, N. Y. For information write to J. Eliot Davison, Pawtucket, R. I.
- ORANGE CAMERA CLUB**—Orange, N. J. Established March 21, 1892. Incorporated May 19, 1893. Headquarters, 222 Main Street. Membership, 110. Date of meetings, 5th and 20th of each month, except July and August. *President*, H. L. Cadmus. *Secretary*, Jos. L. Seiler, 222 Main Street, Orange. Date of annual exhibitions, fall and spring.
- OREGON CAMERA CLUB**—Portland, Ore. Established 1895. Incorporated 1903. Headquarters, 510 Maclay Building. Membership 140. Date of meetings, second Tuesday in January. *President*, James J. Tyrrell, care of Oregon Camera Club. *Secretary*, John V. Reid, Oregon Camera Club. Date of annual exhibition, week beginning October 21.
- PHOTOGRAPHIC CLUB OF BALTIMORE**—Baltimore, Md. Established 1885. Incorporated 1890. Headquarters, Club House, 870 Linden Avenue. Membership, active, 49; associate, 18; honorary, 10; non-resident, 3; total, 80. Date of meetings, every Tuesday, 8.15 p. m. *President*, Percy M. Reese, 1201 North Charles Street. *Secretary*, Julian A. Jenkel, 1629 Monroe Street. Date of annual exhibition, October.
- PHOTO-PICTORIALISTS OF BUFFALO**—Buffalo, N. Y. Organized October, 1906. Membership, 8. Meetings, first and third Thursdays of each month. *Correspondent*, W. H. Porterfield, 235 Hudson Street.
- PHOTO-SECESSION**—Headquarters, 291 Fifth Avenue, New York. Director, Alfred Stieglitz.
- PITTSBURGH ACADEMY OF SCIENCE AND ART, (PHOTOGRAPHIC SECTION)**—Pittsburgh, Pa. Organized January 23, 1900. Headquarters, Carnegie Institute, Schenley Park. Meetings, second Tuesday of each month at Club Rooms, 6017 Penn Avenue and fourth Tuesday of each month at Carnegie Institute, except July and August. Membership, 100. *President*, O. C. Reiter. *Vice-President*, Wm. McG White. *Treasurer-Director*, Wm. McK. Ewart. *Secretary*, J. M. Conner, Shetland and Finley Avenues, Pittsburgh.
- PORTLAND CAMERA CLUB**—Portland, Maine. Established 1899. Headquarters, 571½ Congress Street. Membership, 90. Date of meetings, every Friday evening. *President*, S. S. Skolfield. *Secretary*, O. P. T. Wish, 743 Congress Street. Date of annual exhibition, in February.
- PROVIDENCE CAMERA CLUB**—Providence, R. I. Established 1883. Incorporated 1889. Headquarters, 123 Eddy Street. Total membership, 79. Date of meetings, second Saturday of every month. *President*, Charles Morrill. *Secretary*, J. Butler Whittemore, 123 Eddy Street.
- ROCHESTER CAMERA CLUB**—Rochester, N. Y. Headquarters, Wilder Arcade, Rochester, N. Y.
- SAVANNAH CAMERA CLUB**—Savannah, Ga. Established June, 1897. Headquarters, Park Avenue and Bull Street. Membership, 46. Date of meetings, Wednesday of each week. *President*, J. S. Hexter, National Bank Building. *Secretary*, L. M. Williams, National Bank Building. Date of annual exhibition, Thanksgiving.

- SYRACUSE CAMERA CLUB—Syracuse, N. Y. Established 1886. Incorporated January 19, 1892. Headquarters, University Block. Membership, 101. Date of meetings, Friday evening of each week. *President*, J. E. Bierhardt, Western Union Telegraph Co. *Secretary*, M. L. Trowbridge, 216 Ulster Street.
- TORONTO CAMERA CLUB—Toronto, Canada. Established 1887. Incorporated 1893. Headquarters, 2 Gould Street. Membership, 180. Date of meetings, every Monday, from October to April inclusive. *President*, W. J. Watson, 2 Gould Street. *Secretary-Treasurer*, Hugh Neilson, 295 Carlton Street. Date of annual exhibition, March or April.
- TOWN AND COUNTRY CAMERA CLUB—Minneapolis, Minn. Established 1901. Date of meetings, every week, at which lectures and demonstrations are given pertaining to camera work. Outing excursions on May 30. *President*, George L. Nevins. *Secretary*, M. W. Wright, 726 Felham Street, St. Anthony Park, Minn. Exhibitions annually.
- THE CAMERA CLUB—New York. Established by consolidation of Society of Amateur Photographers and New York Camera Club in April, 1896. Incorporated May 7, 1896. Headquarters, 5 West 31st Street. Membership, 225. Date of annual meeting, second Tuesday in April. *President*, Charles I. Berg. *Vice-President*, Chauncey H. Crosby. *Secretary*, John Hadden, 225 Fourth Avenue. *Treasurer*, Frank M. Hale.
- THE CAMERA CLUB OF THE TWENTY-THIRD STREET BRANCH, Y. M. C. A.—New York. Established June 3, 1904. Headquarters, 23d Street Y. M. C. A. Membership, 87. Date of business meetings, first Monday in each month; third Monday in each month, socials, lantern slide lectures, etc. *President*, Harrison C. Hall, 215 W. 23d Street, Room 812. *Secretary*, Frank M. Ingalls, Room 914, 215 W. 23d Street. Date of annual exhibition, usually in January. No fixed date.
- THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA—Philadelphia, Pa. Established November, 1862. Incorporated April 24, 1885. Headquarters, 1722 Arch Street. Membership, 160. Date of meetings, second, third and fourth Wednesday, 8. P. M. *President*, C. Yarnall Abbott, 43 South 18th Street. *Secretary*, George Donchower, Room 902, 1201 Chestnut Street. Date of annual exhibition, February.
- THE POSTAL PHOTOGRAPHIC CLUB—Washington, D. C. Established December, 1888. Headquarters, Washington, D. C. Membership, 40. Date of meetings, no regular meeting. *President*, Charles E. Fairman, 1006 F Street, N. W., Washington, D. C. *Secretary*, Gustavus A. Brandt, 631 Maryland Avenue, S. W., Washington, D. C. Albums circulate among members monthly, except August and September.
- TOLEDO CAMERA CLUB—Toledo, O. Member of the American Federation. Headquarters, Museum of Art. Meets second Wednesday of month. *President*, Cady Markley; *Vice-President*, E. H. Turner; *Secretary*, C. C. Taylor, 3236 Cambridge Avenue, Toledo, Ohio.
- THE ST. LAWRENCE CAMERA CLUB—Ogdensburg, N. Y. Established 1900. Headquarters, 26 Jay Street. Membership, 12. Date of meetings, at the call of the Secretary. *President*, Arthur L. Jameson, 50 State Street. *Secretary*, John N. Brown, 26 Jay Street.
- THE TROY CAMERA CLUB—Troy, N. Y. Established February 22, 1904. Headquarters, Room 250 River Street. Membership, 150. Date of meetings, first Monday each month. *President*, Herman Krause. *Secretary*, Albert A. MacNaughton, Box 58, Troy.
- WISCONSIN CAMERA CLUB—Headquarters, 623 Grand Avenue, Milwaukee. Meets first Tuesday of each month. *Secretary*, W. P. Horning.
- Y. M. C. A. CAMERA CLUB—Denver, Col. Established September, 1899. Will probably be re-organized on the completion of the new building, about the first of January. *Secretary*, H. W. Huntington, MacPhee Building, Denver.



OUT OF THE MISTS.

Thomas A. Morgan.

United States Weights and Measures.

ACCORDING TO EXISTING STANDARDS.

LINEAL.

	Inches.	Feet.	Yards.	Rods.	Fur's.	Mile.
12 inches = 1 foot.	12 =	1				
3 feet = 1 yard.	36 =	3 =	1			
5.5 yards = 1 rod.	198 =	16.5 =	5.5 =	1		
40 rods = 1 furlong.	7,920 =	660 =	220 =	40 =	1	
8 furlongs = 1 mile.	63,360 =	5,280 =	1,760 =	320 =	8 =	1

SURFACE—LAND.

	Feet.	Yards.	Rods.	Roods.	Acres.
144 sq. ins. = 1 sq. ft.	9 =	1			
9 sq. ft. = 1 sq. yard.	272.25 =	30.25 =	1		
30.25 sq. yds. = 1 sq. rod.	10,890 =	1,210 =	40 =	1	
40 sq. rods = 1 sq. rood.	43,560 =	4,840 =	160 =	4 =	1
4 sq. roods = 1 acre.	27,878,400 =	3,097,600 =	102,400 =	2,560 =	640

VOLUME—LIQUID.

	Gills.	Pints.	Gallon.	Cub. In.
4 gills = 1 pint.	32 =	8 =	1 =	231
2 pints = 1 quart.				
4 quarts = 1 gallon.				

FLUID.

Gallon.	Pints.	Ounces.	Drachms.	Minims.	Cubic Centimetres.
1 =	8 =	128 =	1,024 =	61,440 =	3,785.435
	1 =	16 =	128 =	7,680 =	473.179
		1 =	8 =	480 =	29.574
			1 =	60 =	3.697

16 ounces, or a pint, is sometimes called a fluid pound.

TROY WEIGHT.

Pound.	Ounces.	Pennyweights.	Grains.	Grams.
1 =	12 =	240 =	5,760 =	373.24
	1 =	20 =	480 =	31.10
		1 =	24 =	1.56

APOTHECARIES' WEIGHT.

lb.	3	3	℥	gr.	
Pound.	Ounces.	Drachms.	Scruples.	Grains.	Grams.
1 =	12 =	96 =	288 =	5,760 =	373.24
	1 =	8 =	24 =	480 =	31.10
		1 =	3 =	60 =	3.89
			1 =	20 =	1.30
				1 =	.06

The pound, ounce, and grain are the same as in Troy weight.

AVOIRDUPOIS WEIGHT.

Pound.	Ounces.	Drachms.	Grains (Troy).	Grams.
1 =	16 =	256 =	7,000 =	453.60
	1 =	16 =	437.5 =	28.35
		1 =	27.34 =	1.77

English Weights and Measures.

APOTHECARIES' WEIGHT.

20 Grains	= 1 Scruple	= 20 Grains.
3 Scruples	= 1 Drachm	= 60 Grains.
8 Drachms	= 1 Ounce	= 480 Grains.
12 Ounces	= 1 Pound	= 5760 Grains.

FLUID MEASURE.

60 Minims	= 1 Fluid Drachm
8 Drachms	= 1 Fluid Ounce.
20 Ounces	= 1 Pint.
8 Pints	= 1 Gallon.

The above weights are usually adopted in formulas.

All Chemicals are usually sold by

AVOIRDUPOIS WEIGHT.

27 $\frac{11}{32}$ Grains	= 1 Drachm	= 27 $\frac{11}{32}$ Grains.
16 Drachms	= 1 Ounce	= 437 $\frac{1}{2}$ Grains.
16 Ounces	= 1 Pound	= 7000 Grains.

Precious Metals are usually sold by

TROY WEIGHT.

24 Grains	= 1 Pennyweight	= 24 Grains.
20 Pennyweights	= 1 Ounce	= 480 Grains.
12 Ounces	= 1 Pound	= 5760 Grains.

NOTE.—An ounce of metallic silver contains 480 grains, but an ounce of nitrate of silver contains only 437 $\frac{1}{2}$ grains.

United States Fluid Measure.

Gal.	Pints.	Ounces.	Drachms.	Mins.	Cub. In.	Grains.	Cub. C.M.
1	= 8	= 128	= 1,024	= 61,440	= 231.	= 58,328.886	= 3,785.44
	1	= 16	= 128	= 7,680	= 28.875	= 7,291.1107	= 473.18
		1	= 8	= 480	= 1.8047	= 455.6944	= 29.57
			1	= 60	= 0.2256	= 56.9618	= 3.70

Imperial British Fluid Measure.

Gal.	Pints.	Ounces.	Drachms.	Mins.	Cub. In.	Grains.	Cub. C.M.
1	= 8	= 160	= 1,280	= 76,800	= 277.27384	= 70,000	= 4,543.732
	1	= 20	= 160	= 9,600	= 34.65923	= 8,750	= 567.966
		1	= 8	= 480	= 1.73296	= 437.5	= 28.398
			1	= 60	= 0.21662	= 54.69	= 3.50

Metric System of Weights and Measures.

MEASURES OF LENGTH.

DENOMINATIONS AND VALUES.		EQUIVALENTS IN USE.
Myriameter	10,000 meters.	6.2137 miles.
Kilometer	1,000 meters.	.62137 mile, or 3,280 ft. 10 in.
Hectometer	100 meters.	328. feet and 1 inch.
Dekameter	10 meters.	39.37 inches.
Meter	1 meter.	39.37 inches.
Decimeter	1-10th of a meter.	3.937 inches.
Centimeter	1-100th of a meter.	.3937 inch.
Millimeter	1-1000th of a meter.	.0394 inch.

MEASURES OF SURFACE.

DENOMINATIONS AND VALUES.		EQUIVALENTS IN USE.
Hectare	10,000 square meters.	2.471 acres.
Are	100 square meters.	119.6 square yards.
Centare	1 square meter.	1,550. square inches.

MEASURES OF VOLUME.

DENOMINATIONS AND VALUES.			EQUIVALENTS IN USE.	
NAMES.	NO. OF LITERS.	CUBIC MEASURES.	DRY MEASURE.	WINE MEASURE.
Kiloliter or stere	1,000	1 cubic meter.	1.308 cubic yards.	264.17 gallons.
Hectoliter	100	1-10th cubic meter.	2 bu. and 3.35 pecks.	26.417 gallons.
Dekaliter	10	10 cubic decimeters.	9.08 quarts.	2.6417 gallons.
Liter	1	1 cubic decimeter.	.908 quart.	1.0567 quarts.
Deciliter	1-10	1-10th cubic decimeter.	6.1023 cubic inches.	.845 gill.
Centiliter	1-100	10 cubic centimeters.	.6102 cubic inch.	.338 fluid oz.
Milliliter	1-1000	1 cubic centimeter.	.061 cubic inch.	.27 fl. drin.

WEIGHTS.

DENOMINATIONS AND VALUES.			EQUIVALENTS IN USE.
NAMES.	NUMBER OF GRAMS.	WEIGHT OF VOLUME OF WATER AT ITS MAXIMUM DENSITY.	AVOIRDUPOIS WEIGHT.
Millier or Tonneau	1,000,000	1 cubic meter.	2204.6 pounds.
Quintal	100,000	1 hectoliter.	220.46 pounds.
Myriagram	10,000	10 liters.	22.046 pounds.
Kilogram or Kilo	1,000	1 liter.	2.2046 pounds.
Hectogram	100	1 deciliter.	3.5274 ounces.
Dekagram	10	10 cubic centimeters.	.3527 ounce.
Gram	1	1 cubic centimeter.	15.432 grains.
Decigram	1-10	1-10th of a cubic centimeter.	1.5432 grain.
Centigram	1-100	10 cubic millimeters.	.1543 grain.
Milligram	1-1000	1 cubic millimeter.	.0154 grain.

For measuring surfaces, the square dekameter is used under the term of ARE; the hectare, or 100 ares, is equal to about $2\frac{1}{2}$ acres. The unit of capacity is the cubic decimeter or LITER, and the series of measures is formed in the same way as in the case of the table of lengths. The cubic meter is the unit of measure for solid bodies, and is termed STERE. The unit of weight is the GRAM, which is the weight of one cubic centimeter of pure water weighed in a vacuum at the temperature of 4 deg. Cent. or 39.2 deg. Fahr., which is about its temperature of maximum density. In practice, the term cubic centimeter abbreviated c.c., is generally used instead of milliliter, and cubic meter instead of kiloliter.

The Conversion of French (Metric) into English Measure.

1 cubic centimeter	=	17 minims.			
1 cubic centimeters	=	34 "			
3 "	=	51 "			
4 "	=	68 "	or 1 dram	8 minims.	
5 "	=	85 "	" 1 "	25 "	
6 "	=	101 "	" 1 "	41 "	
7 "	=	118 "	" 1 "	58 "	
8 "	=	135 "	" 2 drams	15 "	
9 "	=	152 "	" 2 "	32 "	
10 "	=	169 "	" 2 "	49 "	
20 "	=	338 "	" 5 "	38 "	
30 "	=	507 "	" 1 ounce	0 dram	27 minims
40 "	=	676 "	" 1 "	3 drams	16 "
50 "	=	845 "	" 1 "	6 "	5 "
60 "	=	1014 "	" 2 ounces	0 "	54 "
70 "	=	1183 "	" 2 "	3 "	43 "
80 "	=	1352 "	" 2 "	6 "	32 "
90 "	=	1521 "	" 3 "	1 "	21 "
100 "	=	1690 "	" 3 "	4 "	10 "
1000 "	=	1 liter	= 34 fluid ounces nearly,	or $2\frac{1}{8}$ pints.	

The Conversion of French (Metric) into English Weight.

THE following table, which contains no error greater than one-tenth of a grain, will suffice for most practical purposes:

1 gram	=	$15\frac{3}{5}$ grains.			
2 grams	=	$30\frac{3}{5}$ "			
3 "	=	$46\frac{1}{5}$ "			
4 "	=	61 "	..... or 1 dram	$14\frac{1}{5}$ grain.	
5 "	=	77 "	..... " 1 "	$17\frac{3}{5}$ grains.	
6 "	=	92 "	..... " 1 "	$32\frac{3}{5}$ "	
7 "	=	108 "	..... " 1 "	48 "	
8 "	=	123 "	..... " 2 drams	$32\frac{3}{5}$ "	
9 "	=	138 "	..... " 2 "	18 "	
10 "	=	154 "	..... " 2 "	$34\frac{2}{5}$ "	
11 "	=	169 "	..... " 2 "	$49\frac{1}{5}$ "	
12 "	=	185 "	..... " 3 "	5 "	
13 "	=	200 "	..... " 3 "	$20\frac{3}{5}$ "	
14 "	=	216 "	..... " 3 "	36 "	
15 "	=	$231\frac{3}{5}$ "	..... " 3 "	$51\frac{2}{5}$ "	
16 "	=	247 "	..... " 4 "	7 "	
17 "	=	$262\frac{2}{5}$ "	..... " 4 "	$22\frac{2}{5}$ "	
18 "	=	$277\frac{4}{5}$ "	..... " 4 "	$37\frac{4}{5}$ "	
19 "	=	$293\frac{1}{5}$ "	..... " 4 "	$53\frac{1}{5}$ "	
20 "	=	$308\frac{3}{5}$ "	..... " 5 "	8 "	
30 "	=	463 "	..... " 7 "	43 "	
40 "	=	$617\frac{1}{5}$ "	..... " 10 "	$17\frac{1}{5}$ "	
50 "	=	771 "	..... " 12 "	$51\frac{3}{5}$ "	
60 "	=	926 "	..... " 15 "	26 "	
70 "	=	$1080\frac{1}{5}$ "	..... " 18 "	$0\frac{1}{5}$ "	
80 "	=	$1234\frac{4}{5}$ "	..... " 20 "	$34\frac{4}{5}$ "	
90 "	=	1389 "	..... " 23 "	9 "	
100 "	=	$1543\frac{1}{5}$ "	..... " 25 "	$43\frac{1}{5}$ "	
1000 "	=	1 kilogram	= 32 oz., 1 dr., $12\frac{3}{5}$ gr.		

"Uniform System" Numbers for Stops from $\frac{f}{1}$ to $\frac{f}{100}$.

In the following table Mr. S. A. Warburton has calculated the exposure necessary with every stop from $\frac{f}{1}$ to $\frac{f}{100}$ compared with the unit stop of the "uniform system" of the Photographic Society of Great Britain. The figures which are underlined show in the first column what $\frac{f}{a}$ must be in order to increase the exposure in geometrical ratio from $\frac{f}{1}$, the intermediate numbers showing the uniform system number for any other aperture.

f	U. S. No.	f	U. S. No.	f	U. S. No.
1	<u>$\frac{1}{18}$</u>	15	14.06	58	210.25
$1\frac{1}{4}$	.097	16	16	59	217.56
1.414	<u>$\frac{1}{8}$</u>	17	18.06	60	225.00
$1\frac{1}{2}$	.140	18	20.25	61	232.56
$1\frac{3}{4}$	.191	19	22.56	62	240.25
2	<u>$\frac{1}{4}$</u>	20	25.00	63	248.06
$2\frac{1}{4}$	.316	21	27.56	64	256
$2\frac{1}{2}$	.390	22	30.25	65	264.06
2.828	<u>$\frac{1}{2}$</u>	22.62	32	66	272.25
$2\frac{3}{4}$	.472	23	33.06	67	280.56
3	.562	24	36.00	68	289.00
$3\frac{1}{4}$	.660	25	39.06	69	297.56
$3\frac{1}{2}$	.765	26	42.25	70	306.25
$3\frac{3}{4}$	.878	27	45.56	71	315.06
4	1.00	28	49.00	72	324.00
$4\frac{1}{4}$	1.12	29	52.56	73	333.06
$4\frac{1}{2}$	1.26	30	56.25	74	342.25
$4\frac{3}{4}$	1.41	31	60.06	75	351.56
5	1.56	32	64	76	361.00
$5\frac{1}{4}$	1.72	33	68.06	77	370.56
$5\frac{1}{2}$	1.89	34	72.25	78	380.25
5.656	2	35	76.56	79	390.06
$5\frac{3}{4}$	2.06	36	81.00	80	400.00
6	2.25	37	85.56	81	410.06
$6\frac{1}{4}$	2.44	38	90.25	82	420.25
$6\frac{1}{2}$	2.64	39	95.06	83	430.56
$6\frac{3}{4}$	2.84	40	100.00	84	440.00
7	3.06	41	105.06	85	451.56
$7\frac{1}{4}$	3.28	42	110.25	86	462.25
$7\frac{1}{2}$	3.51	43	115.56	87	473.06
$7\frac{3}{4}$	3.75	44	121.00	88	484.00
8	4	45	126.56	89	495.06
$8\frac{1}{4}$	4.25	45.25	128	90	506.25
$8\frac{1}{2}$	4.51	46	132.25	90.50	512
$8\frac{3}{4}$	4.78	47	138.06	91	517.56
9	5.06	48	144.00	92	529.00
$9\frac{1}{4}$	5.34	49	150.06	93	540.56
$9\frac{1}{2}$	5.64	50	156.25	94	552.25
$9\frac{3}{4}$	5.94	51	162.56	95	564.76
10	6.25	52	169.00	96	576.00
11	7.56	53	175.56	97	588.06
11.31	8	54	182.25	98	600.25
12	8.00	55	189.06	99	612.56
13	10.56	56	196.00	100	625.00
14	12.25	57	203.06		

THE COPYRIGHT LAW OF THE UNITED STATES, WITH REFERENCE TO PHOTOGRAPHS.

The author, inventor, designer, or proprietor of any PHOTOGRAPH OR NEGATIVE THEREOF, and the executors, administrators, or assigns of any such person shall, upon complying with the provisions of this chapter, have the sole liberty of printing, reprinting, publishing, completing, copying, executing, finishing and vending the same.

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Elsden's Table of Poisons and Antidotes.

POISONS.	REMARKS.	CHARACTERISTIC SYMPTOMS.	ANTIDOTE.
Oxalic Acid, including Potassium Oxalate. Ammonia. Potash. Soda. Mercuric Chloride.	1 dram is the smallest fatal dose known.	Hot, burning sensation in throat and stomach; vomiting, cramps, and numbness.	Chalk, whiting or magnesia, suspended in water. Plaster or mortar can be used in emergency.
	Vapor of ammonia may cause inflammation of the lungs.	Swelling of tongue, mouth, and fauces; often followed by stricture of the oesophagus.	Vinegar and water.
	3 grains the smallest known fatal dose.	Acrid, metallic taste, constriction and burning in throat and stomach, followed by nausea and vomiting.	White and yolk of raw eggs with milk.
Acetate of Lead.	The sub-acetate is still more poisonous.	Constriction in the throat and at pit of stomach; crampy pains and stiffness of abdomen; blue line round the gums.	In emergency, flour paste may be used.
Cyanide of Potassium.	a. Taken internally, 3 grs. fatal.	Insensibility, slow, gasping respiration, dilated pupils, and spasmodic closure of the jaws.	Sulphates of soda or magnesia. Emetic of sulphate of zinc.
	b. Applied to wounds and abrasures of the skin.	Smarting sensation.	No certain remedy; cold affusion over the head and neck most efficacious.
Bichromate of Potassium	a. Taken internally.	Irritant pain in stomach, and vomiting.	Sulphate of iron should be applied immediately.
Nitrate of Silver.	b. Applied to slight abrasions of the skin.	Produces troublesome sores and ulcers.	Emetics and magnesia, or chalk.
	2 drams have been fatal.	Powerful irritant.	Common salt to be given immediately, followed by emetics.
Nitric Acid.	Inhalation of the fumes has also been fatal.	Corrosion of windpipe and violent inflammation.	Bicarbonate of soda, or carbonate of magnesia or chalk, plaster of the apartment beaten up in water.
Hydrochloric Acid.	1 ounce has caused death.		
Sulphuric Acid.	1 dram has been fatal.		
Acetic Acid, concentrated, has as powerful an effect as the mineral acids.			
Iodine.	Variable in its action; 3 grains have been fatal.	Acrid taste, tightness about the throat, vomiting.	Vomiting should be encouraged, and gruel, arrowroot and starch given freely.
Ether.	When inhaled.	Effects similar to chloroform.	Cold affusion and artificial respiration.
Pyrogallol.	2 grains sufficient to kill a dog.	Resemble phosphorus poisoning.	No certain remedy. Speedy emetic desirable.

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Jane Reece.

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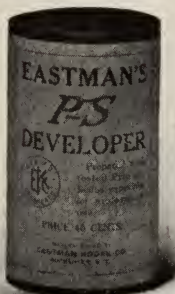
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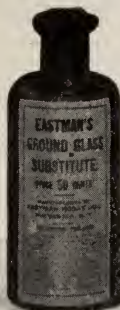
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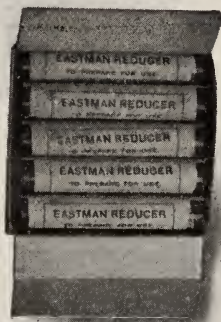


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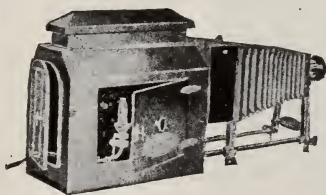
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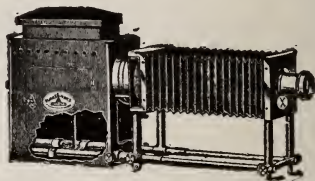
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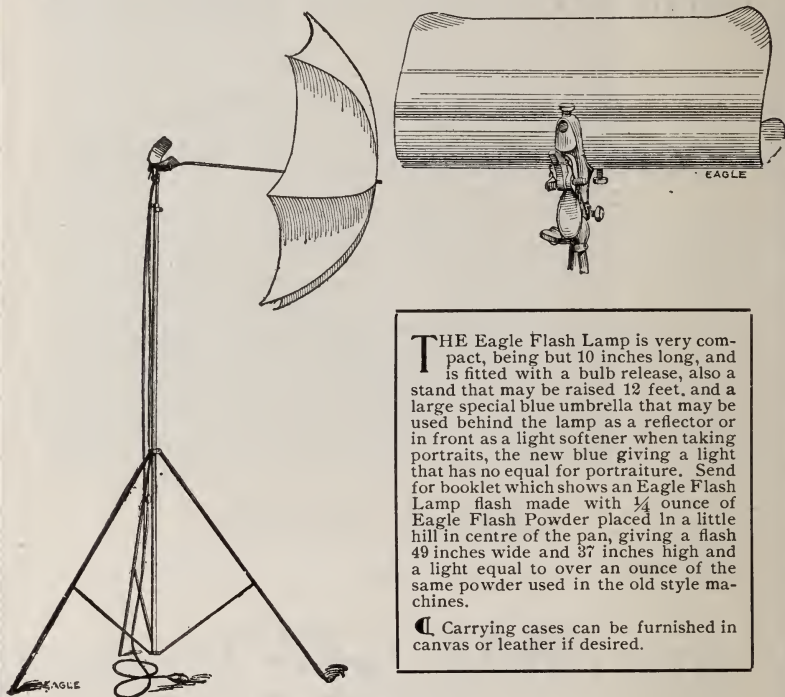
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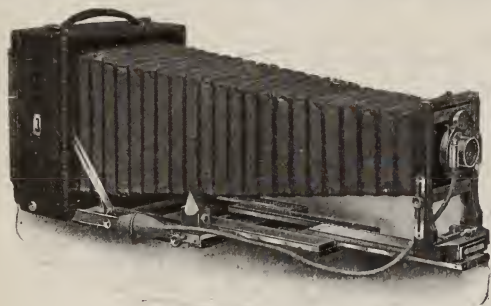
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| * 2. The Pose in Portraiture | 44. Coloring Photographs [raphy |
| * 3. Hand-Camera Work | *45. More About Orthochromatic Photog- |
| * 4. Photography Outdoors | *46. Development Printing Papers |
| * 5. Stereoscopic Photography | 47. Kallitype Process |
| * 6. Orthochromatic Photography | *48. Commercial Photography |
| * 7. Platinotype Processes | *49. Dark-Room Dodges |
| * 8. Photography at Home | 50. Studio Construction |
| 9. Lantern Slides | *51. Press Photography |
| *10. The "Blue Print," etc. | 52. Aërial Photography |
| *11. Developers and Development | 53. Pictorial Principles. |
| 12. Retouching Negatives and Prints | *54. Outdoor Exposures |
| *13. Photographing Flowers and Trees | 55. Architectural Photography |
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| *15. Intensification and Reduction | 57. Winter Photography |
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| *31. Photographing at Night | 73. Panoramic Photography |
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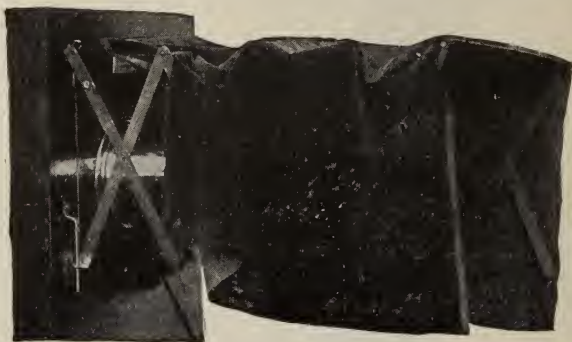
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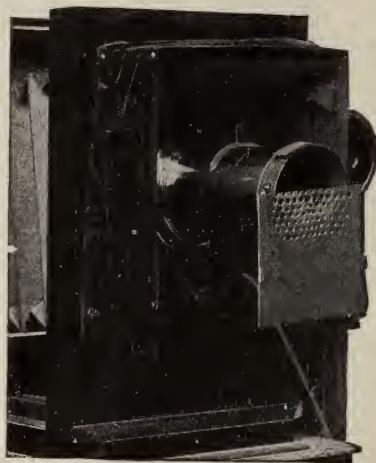
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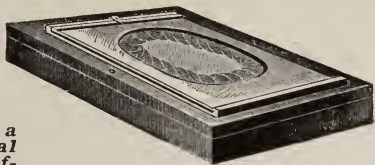
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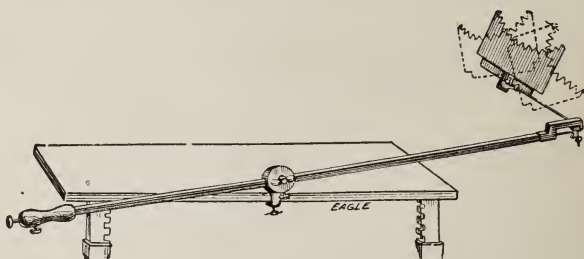
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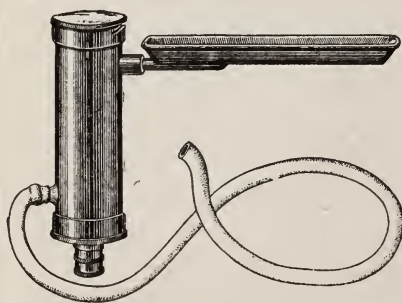


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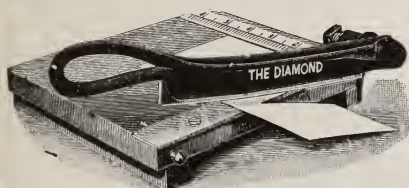
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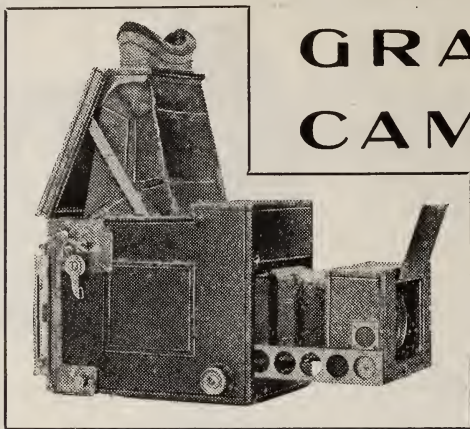
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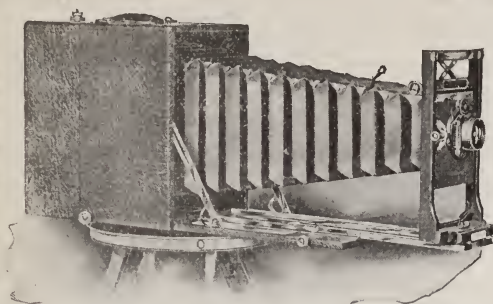
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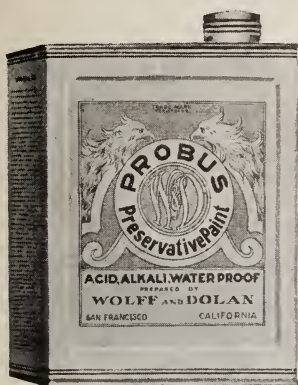
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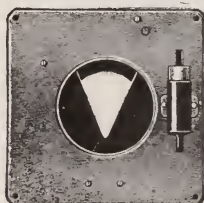
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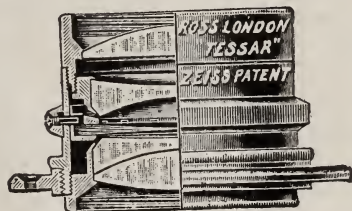
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